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THE

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Agriculture not only gives riches to a nation, but the only riches she can call her own.—DR. JOHNSON.

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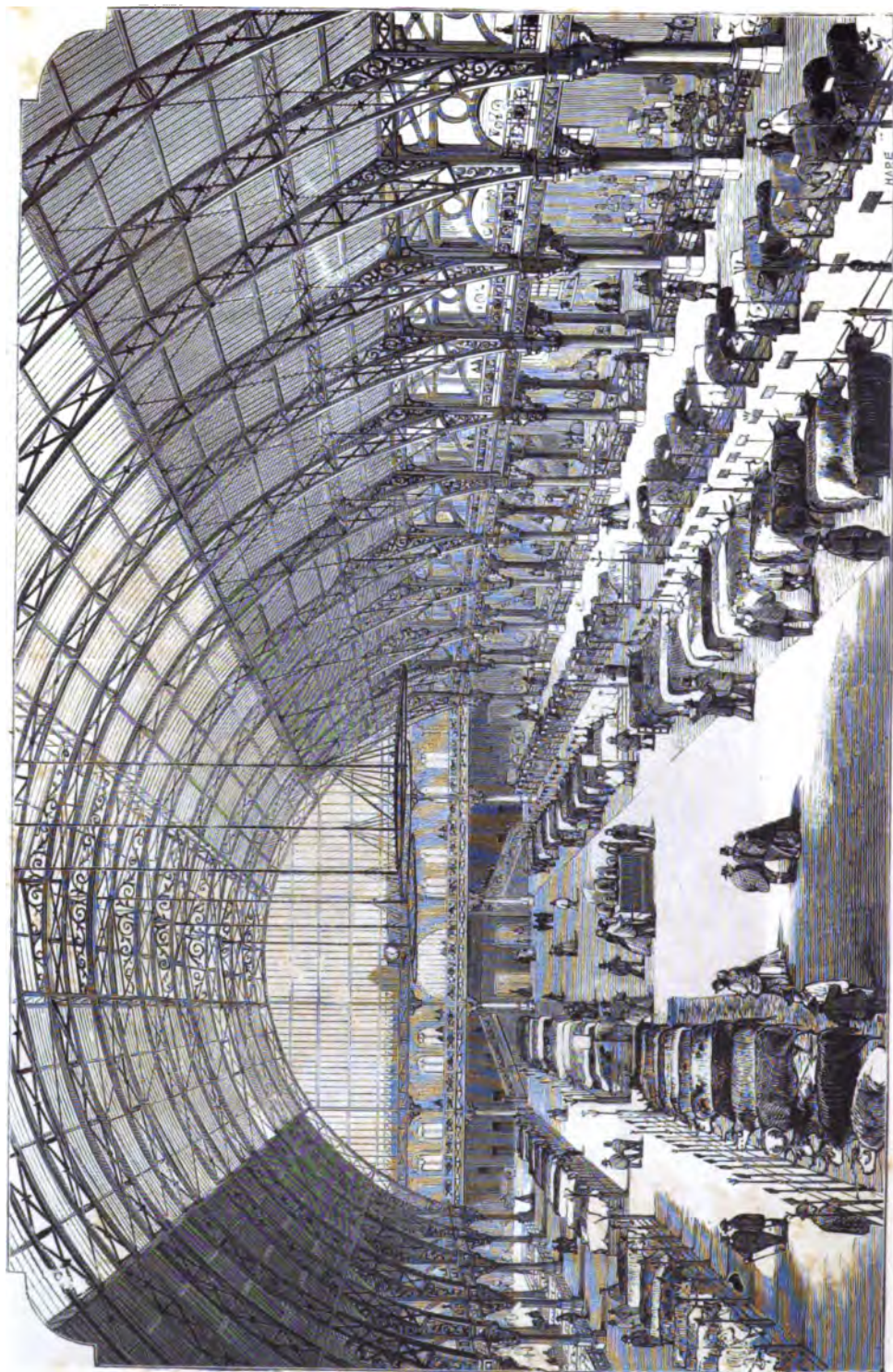
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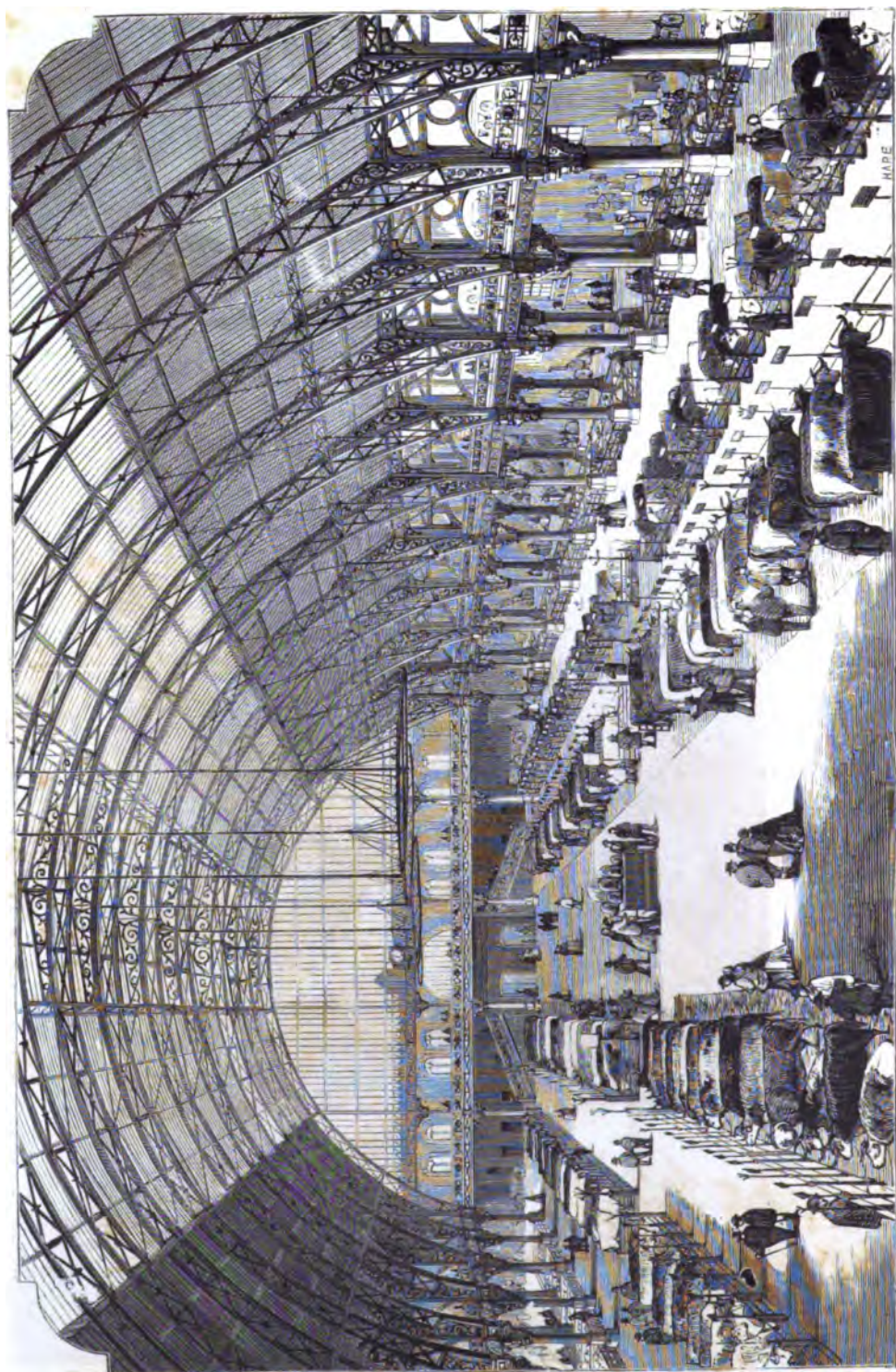
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THE SMITHFIELD CLUB SHOW, IN THE AGRICULTURAL HALL.



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THE SMITHFIELD CLUB SHOW, IN THE AGRICULTURAL HALL.



Engraved by J. B. H. from a photograph

Thomas Carlyle
Thomas Carlyle

THE BRITISH FARMER'S MAGAZINE.

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VOL. LIV.

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NO. CXXVI.

PLATE I.

PORTRAIT OF MR. JOHN CLAYDEN.

PLATE II.

THE SMITHFIELD CLUB SHOW IN THE AGRICULTURAL HALL.

MR. JOHN CLAYDEN,

OF LITTLEBURY, SAFFRON WALDEN, ESSEX,

CHAIRMAN OF THE AGRICULTURAL HALL COMPANY.

Mr. John Clayden was born, where he still continues to live, at Littlebury, in July, 1805. He was the eldest of seven children, the family of Mr. William Clayden, a well-to-do yeoman and practical farmer, far in advance of his own times. As such, he was a frequent attendant at the famous Holkham sheep-shearings, and personally well known to Mr. Coke, afterwards Lord Leicester, who once called at Littlebury, on his way to London. And a call in those days, from so prominent a pioneer in the art of agriculture, was something to be proud of, when a journey was reckoned by weeks and days, instead of hours and minutes, as is now the case, and when the son, Mr. John Clayden will run up to attend a meeting in town, be back home to dinner, and off again for another meeting in Hanover-square, Salisbury-square, or Islington, in the afternoon.

Mr. John Clayden began life at a good school in his native village; but in 1817 his father brought him up to London, and placed him with

Mr. Flower, who, noticeably enough, kept a school at Islington, a locality with which his pupil was destined hereafter to be so directly identified. Young Clayden remained here until the Christmas of 1819, when he went bodily into the business of agriculture, being put to every practical operation on the farm, which he gradually took up as his strength increased; this hard service being of course occasionally relieved by a seasonable degree of recreation, as he still evinces all an Englishman's fondness for field-sports, sees no harm in witnessing the race for the Two Thousand, and we ourselves have encountered him in the field with the Puckeridge.

In a few years, however, the father's failing health compelled his son to undertake the more responsible duties of actual management; and by the year 1827 the direction of the farm, with the buying of stock, the sale of corn, and so forth, was in his charge. Mr. Clayden, senior, died in the year following; and at the age of twenty-three

late Mr. Richard Garrett, of Leiston, and Mr. Cox, one of the members for Finsbury in the last Parliament, were also Directors—Mr. Garrett to the day of his decease; while Mr. Jonas Webb died about a month previous to the Hall being opened.

We are indebted for many of the earlier landmarks of the Smithfield Club to Mr. Brandreth Gibbs' history of the proceedings, which are about to be continued up to the present time.

THE THEORY OF IRRIGATION.

BY CUTHBERT W. JOHNSON, F.R.S.

It was on a recent occasion that I drew the attention of the reader to the importance of certain researches upon the theory of irrigation. Other practical observations have since been published, bearing upon the same valuable question. The general result of these recorded facts all tend to support the like conclusion, viz., that the temperature of the water employed in irrigation is of much more importance than is generally understood. In my former paper I had occasion to refer to the remarks made long since in support of this fact by the great Bacon, and in our time by Sir Humphrey Davy. The practical observations made by this great chemical philosopher were in the valuable water-meads of the Berkshire Kennett, whose bright springs almost all proceed from the chalk formation.

The remarks which I now intend to add were all made upon the springs issuing from the same great formation at Croydon. These springs, it will be well to note, vary in temperature; those which chiefly arise at the very bottom of the Wandle Valley, being commonly of a temperature at all seasons of about 50 degrees. These are very valuable waters for irrigation: they originate from a water-bearing stratum at a considerable distance from the surface, and it is from this circumstance that their uniform temperature is in all probability derived.

Before, then, we examine the temperature of the water issuing from the greater depths of the chalk formation, it may be well to apply the thermometer to the springs which occasionally flow at Croydon from the sides of the hills at a much greater elevation in the chalk. These springs are intermittent: they only occasionally rise, are very copious, and are locally known as "the Bourne Waters."

It was in January, 1861, that I examined the temperature of these waters, which are chemically of the same composition as the other waters of the chalk which rise in the Wandle Valley. These waters, however, although they flow over a considerable portion of grass land in their course to the river Wandle, do not appear to produce any increase in the amount of grass.

On the 13th of January, 1861, the temperature of this Bourne-water at the very highest point where it issued from the ground in a small stream at Birchwood, near to Marden Park, was only 32.8 degrees. About 100 yards further down, where it had increased in volume, by being fed by other springs, it was 37 degrees; as it descended about half-a-mile further down the valley, and had received the contributions of other streams, it was 40.9 degs. Its volume now rapidly enlarged as it descended the valley, and in about another half-mile its temperature rose to 45 degs.; after this, as the stream flowed on, its temperature decreased to 41.1 degs. It then entered a field of considerable extent, occupied by Mr. Rowland, of Couladon; and this land resting on a bed of porous gravel, the Bourne stream was so rapidly absorbed that before it reached the extremity of the field it had entirely disappeared. The temperature of the last remnant of the stream was 42.3. degs. The same bed of porous

gravel extends beyond this for two miles to and under the town of Croydon. Through this great porous bed the Bourne-water flowed, and would (as it used formerly to do) have flooded some of the streets; but the local Board of Health of that town have constructed large brick culverts, into which the Bourne-water now flows, before it reaches the town, and is by these conducted into the river Wandle. The Bourne-water in its course underground of about three miles had considerably increased in volume and in temperature, for it was now, I found, 49 degs. On the same day the temperature of the water of a well dug in the chalk at Croydon was also 49 degs. That of the water from the great well at the Town Waterworks was 50 degs. On the morning when these observations were made the temperature of the atmosphere in the shade was 34 degs.

The temperature of the sewage employed at Croydon in irrigation has been very carefully ascertained by Mr. Baldwin Latham, the very able engineer to the Croydon Board of Health. In a recent valuable work "On the Purification and Utilization of Sewage," he has laboriously tabulated the results of his observations. Before I give these it will be well to prefix his observations tending to elucidate the theory of irrigation. He observes, p. 7, when speaking of the value of the mere water portion of sewage:

"Water is the vehicle that transports the fertilising matter contained in sewage through our drains and sewers, eventually to be dealt with by the agriculturist. To a mind trained under the present practices of the agriculturists, the presence of so much water as is contained in sewage is looked upon as baneful rather than of value, and its effects, if poured upon land throughout the entire year, are considered to be ruinous; yet, when tested in the unerring school of experience how different are the results! and when the facts are fully considered, it is obvious that the very presence of water has a value. When fertilising matter conveyed in water to the crops, the operation is so simple that the labour that otherwise would be required in spreading a solid manure is dispensed with, while the fertilising matter is equally and uniformly distributed with almost mathematical certainty.

"When the fertilising matter is received in water to a great extent, any loss by evaporation is checked, and the loss that often occurs in the application of solid manures from adverse weather is diminished, if not banished; while the matter held in solution by the water is at once presented to the plant in a state ready for assimilation. The plant, having its food ready prepared for it, grows rapidly; and as the period of growth is greatly shortened, a greater number of suitable crops can be taken from the same ground in a season, under the irrigation system, than under the ordinary process of farm manuring. The obvious difference between the system of manuring with solid and liquid manures is this, that the solid manures are applied to the land, while the liquid are applied more directly to the plant. The land is the medium for applying the nutriment that goes to build up the tissues of the

plant; but if a given amount of fertilising matter in a dry and also in a liquid state is applied, the liquid manure is at once food for the plant, while delays must take place before the solid manure can be assimilated by the plant. Solid manure must lie exposed to atmospheric influences until it has become soluble, and then it must be taken into solution by water before it is food for the plant; so that it is quite obvious, all other matters being equal, that a greater number of crops can be taken from the same area of land under the liquid-manure system than under the dry-manure system; which is in fact equivalent to an increased area of land, with this advantage—that there is but one rent or first charge upon the land.

"Water alone has been found to have a remarkably stimulating effect on the growth of plants. It may be said of a plant that it lives and grows by drinking, and not by eating; "for a plant is not like an animal, endowed with special organs to dissolve the food and make it ready for absorption: this preparation of the nutriment is assigned by another law to the fruitful earth itself, which in this respect discharges the functions performed by the stomach and intestines of animals." It is of no use to a plant for the soil to contain all the constituents it requires to promote its growth, if they are not in such a state as can be made available: the first requisite is that they must be soluble, and the second requisite is the presence of water; for water is the vehicle that conveys nutrition alike to the plant and animal. The quantity of water that enters the roots of a plant is so great that the fertilising matter held in solution is in a state of extreme dilution; in fact a concentrated solution of fertilising matter acts upon a plant in an analogous manner to an atmosphere of pure oxygen upon a living animal—in short, it stimulates it to death. Water then modifies the stimulating property of fertilising matter, and tends to produce a steady and healthy growth, just as the nitrogen of the atmosphere modifies the stimulating properties of the life-giving oxygen.

"The amount of water evaporated or exhaled by a plant may be arrived at from an experiment made by Bishop Watson, who found that on a light and hot sunny day, when there had been no rain for a month, plants of grass evaporated water in twelve hours equal to .085 in. in depth on the surface that produced them: a similar experiment after a thunder-storm gave 0.87 in. Calculating from this latter quantity when the ground is moist, a plant of common grass will evaporate water at the rate of quite ten tons per acre per day, and assuming that this rate was only carried out for one-half the year, it would equal 1,800 tons per acre per annum; such is the enormous quantity of water requisite to keep up the healthy growth of the plant, which at once testifies to the advantage of furnishing it by artificial means when required. Water has a beneficial effect in rendering soluble the inorganic constituents of the soil, and so converting them into food for the plants. It is well known that a plant has a power of selecting from the soil only such food as is suitable for its growth; therefore any matter that remains in the vicinity of the roots, and which is not required by the plant, acts injuriously if not removed, by taking the place of matter suitable for the growth of the plant. Now water, in circulating, as in irrigated meadows, has the power to wash away these particles of matter, which, when in excess, the earth loses its attraction for, consequently they are removed without injury to the land. The circulation of water on the face of an irrigated field has the property of protecting a plant from the frost, provided the water is kept on constantly during the entire period of its duration; the reason for which is, that it requires a much more severe frost to freeze water in motion than when stagnant, and

it is equally obvious that water preserves a higher temperature than hard frozen ground, so that a plant is much better protected when enveloped in water than when exposed to the open air. Water itself is also food for plants, as a certain amount of water is decomposed in passing through the tissues of the plant, which goes to build up its fabric. The objects of the agriculturists are fulfilled in the application of liquid manure with more certainty than under the dry system of manuring, as the greatest quantity of animal and vegetable food can be produced from a given area with far greater certainty and economy.

"Sewage has a special value distinct from the fertilising matter it contains, and also from the water that transports it; and this is its temperature. The value of its temperature cannot be over-estimated in a country similar to this, in which extreme changes of atmospheric temperature often take place suddenly, and injuriously affect both plants and animals.

"The value of the high temperature of sewage is more particularly demonstrated in the depth of winter and during long and continuous frosts. It is a rather remarkable circumstance that when the greatest degree of temperature is required the sewage possesses it; that is, the temperature of sewage has been found by the author to increase with the period of duration of frost. This is probably owing to the stagnation of surface water, and also to the habits of the people; as much less cold water is used in the depth of winter than at other times. So great is the value of temperature, that a crop under sewage irrigation may be seen growing even at the time of a severe frost. The author, from an experiment made during the winter of 1864 upon the irrigated fields of South Norwood, and carried out during a period of severe frost, was enabled to cultivate a crop of rye-grass, which was only sown in the early part of the month of November; and when measured at Christmas the same year, the plant was found to be six inches in height, and was then growing luxuriantly; and during the following year that crop was cut six times, the last of which was within one week of Christmas-day, 1865. During the experiment of the winter of 1864, in every case in which the sewage was applied, it had a temperature, in the coldest season, some degrees above that of the atmosphere, but not such a high temperature as the water used in another situation—the sewage-irrigated farm of Beddington, also under the author's direction. The temperature of sewage will be found to vary with the circumstance affecting the supply of water. Thus in a town supplied with water from an Artesian well, the sewage will have a higher temperature in winter and a more uniform temperature at all periods, than in a town supplied from a river or collecting area. Again, a town having but a small quantity of sewage to deal with, that sewage cannot be preserved at so high a temperature as a town in which the mass of sewage is great, as during a cold season the circumstances of exposure affect a small quantity much more readily than a large mass. The following tables give the temperature of the sewage of Croydon as flowing to Beddington and South Norwood."

It must be observed that the water with which the town of Croydon is supplied, is procured from two wells, in the chalk formation.

These observations are the more valuable because the irrigated fields are on two separate formations; those of Beddington, in the Wandale Valley, resting on a gravelly bed, whilst those at Norwood are on the London Basin clay. "By referring to the subjoined tables," adds Mr. Latham, "it will be seen that in time of frost the sewage has a high degree of temperature, which it loses when passed over the land. On the other hand, it has been

previous year, at Leamington (the Right Hon. Lord Leigh), in his opening speech, said that Parliament had appointed a commission to consider the question of the sewage of towns, and recommended waiting until further inquiries could be made. It is inquiry and investigation that are wanted, and I sincerely hope that this Club will aid this most important subject. It is, I repeat, as much a farmers' question as that of the general public. Owners and occupiers of land must be made to understand the great value of sewage; and should the Government of the country introduce a general system of conveyance by drainage, so as to secure it to all persons who wished or had facilities for its use, without being obnoxious to the neighbourhood, not only would a large amount of good be derived, but the produce of the land would be increased. No matter how great the increase of population, only give back to the earth that which she has previously produced, and it will yield her increase. I trust, gentlemen, you will excuse any imperfections in my endeavouring to explain my views of treating on a subject so important, but do not forget that the sewage of our great metropolis, comprising two to three millions of people, is now being wasted, that the land for want of it is impoverished, that ancient countries have fallen from the like cause, and surely will our country be reduced if means are not taken for securing the best fertiliser of the land.

Mr. CRESSINGHAM said there appeared to be at the present time something very deficient in the management of affairs in the metropolis, as they had not yet turned their attention to the utilization of the sewage of such a large place. He had some land in the Plumstead-marshes, through which the great metropolitan sewer passed on its way to the Thames, and after looking at the undertaking, it did seem an extraordinary thing that such a large body of sewage should be allowed to run to waste. There was a large tract of land through which the sewer passed, and would be greatly benefited by the application of sewage, on to which it could be pumped at a comparatively small cost; but the authorities would not allow it to be used. There were four or five miles of marsh-land that could be used for sewage, and he certainly thought such vast quantities of fertilizing matter should not be turned into the Thames. The application of the sewage of the metropolis to the land would produce a vast amount of more corn than was at present grown in the surrounding country.

Mr. STABLES looked upon the waste of sewage from the metropolis as a great national loss; but at the same time he could not agree with Mr. Smith that the non-application of the sewage to the land was the cause of the deficiency in the wheat-crops of late. If the wheat-crops depended entirely on the application of sewage, he thought they should very soon go to the bad. He believed the earth not only required manure, but proper cultivation. The cultivation of the soil was as important as the application of the manure. Without proper tillage and a proper seed-bed, manure was of little use. Another point also deserved their serious consideration, and that was the depth of cultivation. By cultivating a little deeper than many of them did at present, he believed they might secure better crops.

Mr. COOPER thought it was a great pity such a large body of sewage as that running from the metropolis should be entirely lost. Depend upon it, if the farmers could obtain the sewage, they would make good use of it.

Mr. CASTLEDINE said at one time the sewage of London was carted away on to the Surrey hills in waggons. It was utterly wasted now, and was, he considered, a loss to the country. What they intended to do with the sewage, he could not tell.

The CHAIRMAN said he felt at the end of their session they were greatly indebted to Mr. Smith for having brought forward a subject so calculated to produce an interest in the minds of those connected with agriculture. It was clear to all that they could not carry on their business as farmers unless they attended well to the soil. If they did not cultivate and manure, they could not expect to yield good crops, and be a benefit to society at large. The subject before them was one pregnant with a large amount of interest to men whose main object was to produce bread for the people; and he could only again express regret that there were not more present to take part in their proceedings. It was a fortunate thing there were in this country those who would work; and it had been said that those who made two blades of grass grow where one grew before, were benefactors to mankind. By fertilizing their ground, they could make their crops increase, and thus benefit those around them. With reference

to earth-closets and sewage generally, he thought what Mr. Smith had stated was perfectly clear. Earth-closets in country-districts he believed were the cleanest and most appropriate that could be used, as they facilitated the removal of sewage to the purely agricultural land around. He was satisfied one of the most important works they could engage in was the preservation and application of those properties necessary to bring forth crops from the earth. There was no doubt it was intended by Nature that the earth should receive back again that which it gave off in the shape of vegetation, and if they returned to it that which was consumed by man and animals, the soil would never want a greater supply. If they took away from the soil all they could, and did not return it in another form, they could not expect mother-earth to give forth her due. If they were not true to her, they might depend upon it she would not be true to them. The system of earth-closets was one that could easily be adopted in agricultural districts, and by which means it could easily be removed; but if they were to try to carry out the system in large towns like that of Croydon, they would produce a nuisance that would not be tolerated among a people who at the present time did not expect to perceive the slightest smell in the street. He was satisfied there would be a rebellion in Croydon if they attempted to send persons to the houses week after week to remove accumulations in earth-closets. The system of water-closets in towns was far the best, as science had perfected the system to such an extent that not the slightest effluvia was perceived. The works that had been carried out in Croydon proved conclusively that the system was an excellent one, as ever since the introduction of sanitary reform the place had become more healthy, and the death-rate had been gradually reduced, until it was now not more than 16 in 1,000. There was, no doubt, a great waste now going on in the metropolis; for, if the statements of Mr. Mechi and others as to the value of the manure were correct, it was evident between two and three millions of money was wasted every year in the disposal of sewage. When he put the loss at two millions he believed he was below the mark rather than above it. To give them some idea as to what sewage would do, and what it had done in Croydon, he would mention that at South Norwood, where they had some irrigation works, Italian rye-grass was grown at the rate of 50 tons per acre in one year. That, however, was an unusual year; but under ordinary circumstances 40 tons an acre are realized, each ton being worth in Croydon from 17s. to 20s. Each acre, therefore, realized between £30 and £40 a-year, and that too, upon land for which at one time they would not have given 40s. per acre.

Mr. CASTLEDINE said it was not worth 40s. per acre before it was irrigated.

The CHAIRMAN agreed with Mr. Stables in an agricultural point of view. They might do all they could as farmers, but unless they, as it were, manufactured the surface and the sub-soil to produce a proper tilth, no manure would do what they required. The ground-works of agriculture were, first tilth, and then utilization. In the application of sewage, however, it was most important that they should secure a sufficient area to work upon; so that the land should not be glutted, which was at all times to be avoided. If they had a sufficient area to receive the sewage of any given district, they might go on until the end of the world without in any way injuring the land. There is one remark Mr. Smith had made in reference to the application of sewage, that he should wish to reply to. Mr. Smith had stated that irrigation was carried out at the expense of health; but that could not apply to Croydon, as the direction of the sewage from the town is a natural fall to the Thames, under which circumstances it is impossible for the sewage-water to be used over again, unless the law of gravitation is altered, and water was allowed to run up-hill.

Mr. SMITH said cultivation was no doubt of considerable importance; but at the same time, if they took a certain amount from the ground in the shape of wheat or mutton, they soon made it poor, unless they returned something to it again. He had no doubt if a farmer could get a hundred loads of good stuff, he would not refuse it. The Chamber of Agriculture would no doubt be a good service to the farmer, but it had its work to do, as chambers of commerce had to do before it.

A cordial vote of thanks was then passed to Mr. Smith, and the meeting terminated.

SHROPSHIRE CHAMBER OF AGRICULTURE.

The dinner took place at Shrewsbury on Saturday, Dec. 14, when Lord Powis presided; the vice-presidents being Messrs. D. F. Atcherley, W. Butler Lloyd, Thomas Williams, Thomas Mansell, and William Nevett. Beside the chairman there sat Mr. J. R. Ormsby Gore, M.P.; Lord Newport, M.P.; Mr. R. More, M.P.; Col. the Hon. Percy E. Herbert, M.P.; Mr. C. S. Read, M.P.; and Mr. W. J. Clement, M.P. There were about 300 others present. Amongst the addresses more especially pertinent to the occasion,

Mr. JOHN BATHER said: We may congratulate ourselves on the result of our exertions, and the bill which is to protect our flocks and herds from the ruinous introduction of foreign pestilence. Again, there is the question of education. If the hon. member for Brighton had ascertained the views of any Chamber of Agriculture, he would not have introduced a bill for the education of agricultural labourers, which can only be useful hereafter, as showing what ought to be avoided. There are other questions not yet subjects for legislation—they may be soon—such as the tenure of land, which, in this county, is generally such as to be incompatible with an improved system of agriculture, and the question, which we seem almost afraid to mention, of game, where the interests of the landlord and tenant are directly antagonistic, and should, without delay, be reconciled. Why, I ask, should not we, by timely discussion and amicable adjustment, ourselves rescue these and like questions from the rude hands of those who know nothing of your feelings towards your landlord, and have no sympathy with the love of sport which is inherent in the owners and occupiers of land?

Mr. JASPER MORE, M.P., said, notwithstanding the time given to reform, agricultural questions, owing chiefly to the action of Chambers of Agriculture, received their fair share of consideration in the House of Commons last session. The Turnpike Trusts Bill came to an end in the committee of which he and his friend Mr. Read were members; but another bill for the abolition of turnpike trusts was before the House in the present session. The fate of the malt-tax question with the present Ministry was well known, but he hoped their committee, which was all they could get from Mr. Disraeli, would be instrumental in bringing the subject forward to advantage before a reformed Parliament. There were only two courses open to them in the future dealing with that question—either to agree with Mr. Cobden's advice, and insist upon a reduction of expenditure, to be applied to the repeal of the malt-tax, for which proposition the present moment might be inopportune; or to support a tax on beer instead of the malt-tax. He did not suppose the brewers would like this tax, but if they did not like it any more than the farmers liked the malt-tax, it was open to them to agitate to get rid of it, and then the whole tax might be got rid of altogether. He must mention that Mr. Gladstone presented a petition to Parliament from a workmen's association in Manchester, praying for a repeal of the tax. The question of weights and measures seemed to have interested them a good deal since their last meeting on the subject. He would advise them to take all possible pains with their discussions, for the Shropshire Chamber attracted attention; and he found the report of the meeting on the subject at Oswestry carefully preserved at the Board of Trade. He was not at liberty to state what opinions were expressed upon it, but he found that uniformity of sale by the imperial measure was already made as stringent by law as it could be. He could have gone into Shrewsbury market that day, and have fined every one who bought and sold by any other weight or measure five pounds a-piece. If the farmers, therefore, required uniformity, they had only to desist from illegal sales themselves, and agree to carry out the law. He advised them to lay to heart Mr. Bather's wise remarks, and also not to be afraid of discussing all questions in which they thought the agricultural interest was affected by politics. He had noticed that the Chairman of the Farmers' Club—quite a distinct body from them—in London had said that week that he saw no reason why a farmers' club should not discuss the Reform Bill if they choose. He quite agreed with this view, and

wished the Reform Bill had been discussed by the farmers, in every county, before it had become law.

Mr. H. SMITH (Sutton Maddock) said something had been said about the education of farm-labourers' children. He asked why was that to be made compulsory? Five years ago, with wretched unremunerative prices, and since, with the fearful scourge of cattle-plague, who had proposed an education for poor farmers' sons? The ingatherings of their root-crops in last autumn and early winter had become almost as important as corn-harvest in September; and if they were to take away the women as willing and grateful helpers, and the lads as drivers, and put men at high wages in their place, he simply said farmers could not afford it. Millers in that room knew that since harvest, where 60 or 80 bags of wheat had been sold, only 40 and 60 had been realized, and 8d. and 10d. for beef and mutton was only paid by consumers who knew no better; and the compulsory education would have to be paid by those who enforced it, in the shape of lower rents. He was not afraid, but pleased to say that on that nice December day he had a woman and lad at turnip-harvest, getting 1s. 6d. to 2s. per day. That, with the husband's 12s. a-week, made men in his neighbourhood, if not rich, happy and contented, and if they were not they could appeal to their masters for redress. He said if labourers and their families were contented, don't push education down their throats. They, as peaceable farmers, condemned a trade-union training, that flung death in a bottle into a neighbour's dwelling, or fired a master's rickyard. As to cattle-plague, had they a board to approach with confidence, where their requests or advice would be received and considered, he had no hesitation in saying the dreadful scourge from abroad, which time after time ravaged their homesteads, would be stamped out at once. Again, their Chamber would be the readiest means of approaching that most important subject—the equalization of weights and measures. He must say he was all in favour of weight, but he was sorry such different opinions prevailed. He believed at Oswestry, a few weeks ago, resolutions were proposed by word of mouth in favour of weight, and the same men held up their hands for measure.

Mr. SEWELL READ, M.P., said: The one great subject that has engaged the attention of the Central Chamber, and on which it is perfectly unanimous, relates to the importation of foreign stock. Now there has been a whisper—only a whisper—that on this question the Shropshire farmers are not all agreed. I hope you will speak with no uncertain mind. Surely, for the protection of your flocks and herds, you must impress upon everybody, and especially upon Government, the necessity of slaughtering foreign stock at the ports. One of the early speakers this evening said he hoped he should never have the cattle plague here again. We all hope that, but what is the use of hoping? Let us keep it away. Don't let it come in; and more than that, don't let us have those other foreign diseases which have devastated our flocks and herds for years past. I had the honour of being one of the cattle plague commissioners. When we made our first report we were very roughly handled, and got more kicks than halfpence; but that, I think, is the general fate of public men. When the Parliament of this country was good enough to embody our recommendations in an Act, there seemed no chance of stopping the plague; but when they were carried into effect the plague was diminished, and eventually stopped. What I ask is that all of you, and every farmer in the land, should use your best efforts to get the second report carried out, so that all foreign cattle may be killed at the ports, except store stock, which should be put in quarantine. It is no use having a market for cattle alone; there must be sheep and pigs. Make it a fairly good market for the seller and consumer; and don't have half-measures of protecting your herds—the herds of this great agricultural county—while you have your flocks, which are still more important, open to those insidious diseases which we know are imported from abroad. I have only one other question to bring before the meeting. My hon. friend (Mr. More) has said how pleased he is to see a union

between Norfolk and Shropshire. It is a great pleasure to me to know that we, in our great barley-growing county, and you in this county with its rich pastures, are all at one on the question of the malt-tax. It has been said that the question has been shelved or shirked. I deny it entirely. The Central Chamber very wisely said that during the sitting of the committee it would be undesirable to make further demonstrations. I was glad to hear Mr. More speaking in satisfactory terms of that committee, because at a meeting held some time ago he said I was one of the persons who insisted upon that committee, and that it was a matter for me and my constituents to settle among ourselves. Not only have my constituents condoned it, but they have said it was the only thing to do. If we can't do what we wish, for goodness' sake, let us do what we can; and because we can't with one stroke abolish the malt-tax, is that any reason why we should not get all the support we can for our side? On the contrary, there is every reason why we should tell the people of this country how hard the tax presses upon us, and especially the labouring population. We have had a great deal of useful evidence already from farmers in this country; but of all the witnesses that have come before us none have been equal to my friend Mr. Smith. If any one reads his evidence, who is not well informed on this important subject, and the way in which it presses on agriculture, he must be a dense man if he does not understand the subject better after he has read that evidence. Whenever this Chamber has an opportunity of making a report on this subject it should certainly embody the main portions of his evidence. Now what have we to do? What do we look forward to? We don't look forward to perfect abolition for many years, nor can we look for very considerable reduction; but we must be content to do the best we can, and that best is to transfer the tax to beer. Why? When we want to get rid of a thing we move it in the first place. For 200 years the tax has been on malt, and if we move it to beer we don't believe it will be there 200 months. We have all been talked to death on this subject, but I say if we put the tax on beer we shall let the labouring men know where the shoe pinches, and I verily believe that in a short time household suffrage will get the tax entirely removed.

Mr. F. HARRIES, in returning thanks for the landlords, said the first duties of a landlord were to provide for his tenantry comfortable farm houses, cottages for his labourers, good buildings and shedding for the cattle, and to help a little in the

draining; and that done, it became the duty of the tenant to cultivate his farm in the best manner possible.

Mr. EVAN DAVIES said the tenant farmers want but just and equitable laws to put them in a position to defy competition with the whole world; but the tenant farmers do not consider that law equitable or just that imposes upon them the entire support of the poor, whilst those Leviathans of the monied world who have manufactured their wealth out of the bones and sinews of the working-men of England are exempted from contributing to the means of comforting and relieving those working-men when old age and other infirmities befall them. The tenant-farmers do not consider those laws just or equitable which exempt the property in mines, so fruitful in making widows desolate, from furnishing the means to comfort the widow and the fatherless in their affliction. The tenant-farmers do not believe those laws equitable or just that burden them with the entire local taxation of the country, and exempt game, so fruitful in filling our gaols with prisoners, and our relief lists with paupers from any participation in the expense of keeping those men in prison, or supporting their wives and families during the husbands' incarceration. The tenant-farmers do not consider those laws equitable and just that enable the heavy traffic of timber to destroy our roads and highways without contributing towards the maintenance of those roads and highways. The tenant-farmers do not consider those laws equitable and just that enable the landlord to seize the tenants' property for dilapidation, but which refuses the tenant or his executor, on any termination of the tenancy, the power to obtain from the landlord compensation for his unexhausted improvements. The tenant-farmers do not consider that law constitutional or just that empowers an irresponsible body to extract from the farmers of Shropshire fifteen or twenty thousand pounds annually, and refuses to allow the inflicted to have a voice or the slightest control over the expenditure of that large sum.

Mr. MATHEW EVANS said there was one thing which he should like to see Chambers of Agriculture agitate for, which he considered of far more consequence than the repeal of the malt-tax, or any other question they had yet discussed. He alluded to a proper and equitable Tenant Right Bill. There were, it was true, many good landlords and many bad tenants; but there should be something, he thought, to secure the man who laid out his capital in improving his farm, and to ensure him a recompense if he should be compelled to leave it.

STAFFORDSHIRE CHAMBER OF AGRICULTURE.

The inaugural dinner of the newly-formed Chamber of Agriculture for this county was held on Tuesday, Dec. 17, at Wolverhampton. The dinner was preceded by a meeting in the Town Hall, when there was a numerous attendance, the Earl of Lichfield, the president of the Club, in the chair.

Mr. B. H. MAXSEN read a paper upon "The Proposed Abolition of Turnpike Gates," in which he said: You are all aware notice has been given by Mr. Knatchbull Hugessen, to bring in a bill during the coming session, as the bill expresses it, "to alter and amend" the law relating to turnpike trusts. The first question which arises is, Do you admit the preamble of the bill? That tolls are proportioned to the use of roads in most cases, users only having to pay, cannot be disputed, and that a large amount of property will, under the proposed bill, entirely escape payment; at the same time members of the then non-payers are and will continue to be great users. The small amount of property which is rateable to local taxation will render the impost doubly burdensome to those who may happen to be possessed of real property. I can easily understand large fundholders, and men who have property which now is exempt from local taxation, feeling anxious that the bill should find a favourable reception; but I am not at all clear that it is to the interest either of the owner or occupiers of the land to give it their support. With the introducers of the bill I am not disposed to complain; but I am inclined to think that the alteration is undesirable, and that the amendment will be no improvement. The Highway District system, formed under the Acts 25 and 26 Vict., cap. 61, and 27 and 28 Vict., cap. 101, which is only partially in operation in the

county, finds little favour here, and the notice given to discontinue it at the next Quarter Sessions, is a conclusive proof it has few things to recommend it, and that I feel sure will be the remedy proposed for the existing (by some considered) evil and unsatisfactory state of things. Having been in operation for three years, and finding no favour here, why should we be anxious for a universal and compulsory application of the permissive Highway Act, which I doubt not is the real object aimed at? The great objection to the continuation of Turnpike Trusts is that they are too costly in their management, and that a less amount of money would be required to maintain good roads. Now, as far as the New Highway Act has been in operation, there is but slight difference, the expenses being pretty nearly equal with the Turnpike Trusts. I am not giving a long review in the preparation of this paper, but shall try to confine my remarks to the probable operation the Bill would have in this county, feeling sure that others will be able to give better information upon the general subject than anything which you would be likely to hear from me. That any alteration of so great a nature as the one now proposed cannot be effected without an amount of expense is well known; and it is for us to convince ourselves, after a full inquiry into the case, in all its bearings, the course it is best for us to pursue, as no benefit can arise from the alteration without we feel confident that the highway system will be less costly in its operation than the present turnpike system has been found to be. Evidence was given before the select committee of the House of Commons in 1864 by Mr. Watkins, in which he states that nearly three-fourths of South Lancashire adopted the Local Govern-

ment Act to keep them from coming under the operation of the New Highway Act, and thereby retain self-government. As regards our own county, the bill will place us in this position—when at this period our highways cost us over £30,000 per annum, and are repaired by rate, our turnpike roads cost us fully £44,000, and that sum is supplied by the collections at turnpike gates. Our debt upon the trusts in this county amounts to £141,178, according to the last Parliamentary return, thus placing a debt upon 815 miles of road equal to nearly £180 per mile. Of course, it will vary considerably. Some of the roads have but little debt, and others are still in a bad position, in not being able to pay off any, or only a minimum amount of the original debt. These debts, you must be aware, were sanctioned by Parliament, and were for great national purposes, when her Majesty's mails were conveyed along the roads; and if such is the case, should we not look to other sources than the parish to pay off the same? If another of the stipulations of the bill is enforced, we are in no better position, because we are to have the gates continued until the debts are paid. The Act gives borrowing powers, and the Secretary of State power to continue the use of the toll-gates for ten years, for the extinction of the debt. Under these circumstances, we have to bear a double tax, *i.e.*, pay off that which was contracted without our sanction, and keep the roads in a good and efficient state of repair. Provision is also made for the assistance of over-burthened parishes, by receiving a sum from the county rate—an exchequer into which we now pay; and although it may be an alleviation in some cases, it does not deal satisfactorily with the case under discussion. The area of a parish will never do for a settlement of the question: the county would be a much more comprehensive, and, I think, a fairer means of bringing the necessary funds; and that, with a financial board composed of a certain proportion of magistrates and ratepayers, would be more likely to be managed with true economy, than being left to the individual supervision and optional care of an unpaid parish or district surveyor. The deficiency caused by the removal of the gates must be supplied; and a great question is opened here—if it is by county rate, what property is to be exempt? Towns will say, and truly, they now repair their streets without any assistance from us; and we as truly tell them, that we repair our highway without their aid; neither of the interests, therefore, is unjustly dealt with by an equal rate over the whole county, if the rate is to be the principle applied. It is pretty clear that we are increasing our local taxation to a great and unprecedented degree, rates of all kinds having increased very considerably during the last fifteen years; and when we find that so great an amount of property which pays property-tax pays no rates, I think there is a sound reason for our objecting to the roads being repaired by rate when a great number of those now assessed will be almost entirely relieved by the charge. I will ask how will this operate in our own parish? Several who keep a carriage and one horse pay a rate upon from £30 to £50 per annum; others who keep three, four, or five horses, at from £70 to £100; and those who have not the luxury of a carriage and whose earnings are by manual labour only, pay a rent of from £8 to £10 per annum, and will be compelled to contribute to the repair of the roads in the proportion of 5s. where the owner of one horse pays 20s., and in a ratio equal to more than 10 per cent. of the men who keep an establishment of servants, carriages, and perhaps his half-dozen horses, for amusement and recreation and in his general business. Men largely engaged in trade, keeping horses for the use of the same, will not pay in an adequate proportion to the benefit they receive; instance a case of a person who has works in two towns, and in each of which he is rated, but he will receive the advantage of the connecting link and be greatly benefited at the expense of some one else. In some parts of England provision is made against the destruction of the roads by an addition of double toll on all timber drawn from the 1st of October to the 1st of March, and those conversant with the nature of timber-haulage know that nothing is so bad for roads; and that is done by men who are not rated at any amount, and whose names could scarcely be found in a rate-book. The carriage of all kinds of heavy materials, such as timber, coal, iron, manufactured or unmanufactured articles of various kinds, are often drawn by men who will pay but little towards the repair of a road when it is left for the parish to do it. Carriers' carts of all kinds, cabs, cars, omnibuses, and all carriages let out for hire, will doubt-

less receive much benefit from the passing of this bill. The inhabitants of towns who now pay would also be relieved; but, I fear, I can see too plainly who is to bear the additional impost—who is to fill the chasm which is now attempted to be made. I fear the passing of the bill will reduce the general standard of the roads; for, when left to the parish, they will not be brought very easily to consider that they must place them in a better position than the general highways. In the neighbourhood of London toll-gates have been abolished for some years, and I some time ago wrote to a friend of mine to know in what state the roads then were, in comparison to formerly; and his reply was, "They are much worse," and I think it must follow as a natural consequence that such will generally be the case. In some instances payments increase, and in others a reduction takes place. Perhaps some gentleman present will be able to give us his experience of the state of some of the roads east of Wolverhampton, where I have been informed the toll gates have been removed. I have stated previously that our highways cost us a little more than £20,000 per annum, and our turnpike roads £44,000 in this county; we therefore have to provide that sum by other means, and the bill proposes to meet this great addition by a rate levied as our present highways are done, and that the Highway Bill shall be brought into general operation. Now, I ask, will this do? will it be a fair means of meeting the case? will all users pay in proportion to the benefits they receive? My answer is, No. In my opinion our system of rating is unsatisfactory and particularly unfair. There is now no scruple with some legislators and politicians to try and saddle all local burthens upon the rates. In 1861, wheat averaged 65s. 3d. per qr., and the amount collected for poor and county rates was £6,351,828; and in 1866, when wheat averaged for the last three years 42s. 1d. per qr., we find our payments to that source is £9,573,772, an amount equal to one-third more than the former year to which I allude, and the price of wheat is averaging fully one-third less; and although this is the case, we are asked to increase our responsibilities by being taxed by rate, to the extent before alluded to, of over £44,000 per annum, for the repair of our present turnpike roads. We must also bear in mind that nearly one-third of our local expenditure is beyond our own control, and therefore directly opposed to the acknowledged law of taxation and representation, about which we have recently heard so much. We are also given to understand that during the coming session a bill will be brought before the House, the object of which is the better education of the labouring classes; that too, I hear, is to be another imposition on the rates. Of our county expenditure, I think, we have little cause to complain; at the same time, it is necessary that our interests should be closely watched, and a check put upon any additional impost which may be proposed. I presume that some present are aware that in many parts of England associations of ratepayers, for the removal of the present (as they consider) unfair exemption of incomes, arising from personal property, for poor and other rates, are forming, "To watch over all measures affecting the interests of ratepayers, both in and out of Parliament; to take such action thereon as may seem desirable; to connect itself with the Central Chamber of Agriculture in London; but especially for obtaining a re-adjustment of the local taxation now levied under the pages of poor rates." The hon. secretary of the Somersetshire County Association forwarded me a copy of the rules, and the list of subscribers, amongst whom are many persons of position, including both clergy and laity. The United Chargeability Act of 1865, has brought about a complete change of the old parochial system; and although union rating is not now established, I think the day is nearly arrived when we shall see that brought to bear. Few things require legislative interference more than the rating question, Assessment Committees being actuated by motives so opposite, some doing all in their power to raise the assessment to the utmost value, whilst in other unions endeavours are made to keep it to the lowest point, and as the poor, county, and police rates are collected together, unequal pressure is brought upon the highly rated unions. It must not be inferred that I am so completely wedded to the turnpike system as it is now carried on; but my firm impression is that if the present bill becomes law, you will certainly find the working man and the agricultural class unfairly taxed for the repair of our great national and imperial roads, at the same time relieving the millionaire and men of moderate incomes, and a number of interests too numerous to

mention, whose object will always be to keep the roads at their present standard. Professor Levi's estimate of the total earnings of the working men is 418 millions per annum, added to the 330 millions as the sum on which property-tax is paid, gives a fair illustration of the comparative minimum upon which local taxation is imposed. My own views are to relieve the operative class and all people of limited means as far as we can do consistently; but the effect of this measure will be to increase their payments, and that in a case where the benefits they receive do not correspond with the additional impost. Before the bill is brought forward in the next Session, can any more desirable course be suggested than to agitate for the existing turnpike roads to be repaired by a rate levied on the same scale as the property tax, viz., on 333 millions of property instead of the present 111 millions on which rates are now levied, and if the debt is to be placed on the shoulders of the ratepayers, let that be dealt with in the same manner. The last suggestion appears to me more just than the provision of the proposed bill. If in any of the calculations I have adduced any error may have occurred, I trust you will pardon it; the figures are all based upon the best evidence I have been able to collect, and the statistics are those furnished by the last Government returns. I hope you will not consider me an alarmist, and I trust that my misgivings may prove unfounded; but the existing state of things, I fear, will not be improved by the abolition of the gates and the same good and efficient state of roads maintained without an undue pressure, in many cases, on the owner and occupier of the land. The Consolidation of Trusts would do much; a broader area of rating might give us additional relief. Gentlemen, there is an old adage "It is the last feather that breaks the camel's back," and we feel it applicable to our case. I have pointed out to you the price which grain has averaged during the last few years, and the price that ruled from 20 to 25 years ago. I will, then, ask you, as practical men and men of business, are we doing more than the case requires from us? Are we not in defence of our legitimate rights called upon to bestir ourselves, and resent that which we feel must be an imposition, unless a broader area of rating is extended on which to levy an amount of tax which for all local matters is entirely exempt? Let us not prove ourselves a rope of sand, a simile I fear which has been used with too much truth, but let us in hand and heart unite in stemming off the tide of oppression which is directly levied at our class, the oldest, not the least considerate, not the least important, not the least loyal, as the one to which I am happy and proud to belong. In the parish of Tottenhall, in which I reside, there are over 11 miles of turnpike roads with an expenditure amounting to nearly £1,000 per annum, all of which must be repaired by the parish, and the neighbouring parish of Codsall has only $\frac{1}{2}$ of a mile of turnpike, although the length of highways in Codsall is nearly half the amount of those in Tottenhall; but the length of turnpikes is nearly twenty times as much in one case as the other, showing more conclusively than anything else I need state how unsuited the parish boundary is in this case. The highways in this parish cost nearly £11 per mile, and the turnpike fully £90; this is on the assumption that these roads cost the same to repair as the other roads in the same trust, which is composed of 24 $\frac{1}{2}$ miles of road. According to the last return, manual labour, materials and carriage of the same, tradesmen's bills, treasurer, clerk, surveyors' salaries, and incidental expenses amount to £2,271 19s. I do not gather from returns the amount of debt on this particular trust. A neighbour of mine has furnished me with some of our highway expenses during the last few years, and in the liberty in which he was surveyor (Tottenhall Regis) in 1852 and 1853 the following were the sums expended, namely, £86 in the former and £82 in the latter year; but in 1864, ten years afterwards, £168 6s., [and in 1865 £137 2s., and in 1866 £143 13s.], thus giving a further illustration of our yearly increasing local expenditure, the average of the last three years being £153. In the adjoining parish of Bonnigale the present highways of 24 miles are repaired at an annual expense of £16; they have 1 $\frac{1}{2}$ miles of turnpike road, which will considerably more than double their expenses. During the last fifteen years 24 million of the debt upon the roads has been paid off throughout the whole of the kingdom, and I am disposed to think that great economy in the cost of maintaining turnpike roads by consolidating the whole trusts of the county or some large area

might be carried out, and the roads be kept in a high state of efficiency, and also the desirability of a surveyor being a first-rate man, thoroughly skilled in the making and repair of roads. I believe there is a general impression that it will be most desirable to continue the present system until the debts are all paid; it would take a comparatively short time if the proposed consolidation were adopted.

Mr. BRAUN said he believed from what he could see and hear that the days of turnpike-gates were numbered, and the question for them to decide was—which was the most equitable way of providing for the repair of the roads. To cast the expense of repairing the roads upon the rates of the parishes through which they passed was nothing less than throwing an extreme burden on the agricultural interest—as well as upon owners and occupiers of the soil, who received the smallest return for their capital and labour. A county area of rating was undoubtedly more convenient and more advantageous in many respects than a parish area, but to change the area from the parish to the county would simply be to take the money from the right instead of the left-hand pocket of the farmer. He believed the only equitable system of raising the means for the repairs of the roads was by levying rates upon the same basis as the income-tax, whereby landlords and tenants and men who rode in their carriage would pay their share; and that class for whom Mr. Masfen had spoken so kindly—the artisan and labouring class—would be relieved in consequence of the smallness of their income. By this system he believed the expense would be reduced, for at present a good deal of the expenditure on turnpike-roads went into the pockets of the lessees of tolls in the shape of profit.

Mr. C. S. READ, M.P. for Norfolk, said as one of the members of that Select Committee of the House of Commons, to which Mr. Knatchbull Huggessen's Bill last year was submitted, perhaps he might be allowed to make a few remarks respecting it. That Bill came before them in a still more objectionable shape than the Bill introduced this year, and they thought it would be better to throw the burden of the debt on the county-rate rather than keep it on the parishes, and he thought that although that was merely a makeshift, it was still preferable to putting the whole of the burden on the smaller area. With regard to the repairs of the roads they were probably aware that it was proposed in districts where Highway Boards prevail that the repairs of the turnpikes should be thrown over the whole extent of that district, and not be a burden only to those parishes over which they happen to pass. But they must see that the whole drift of the Bill was what he might term an under-current to make it impossible for those who prefer the old system of parish surveyors to maintain their ground. If they were to have these districts compulsory, he said the repairing of the roads in the parishes should be thrown on the districts and not on the parishes—just the same as they had now made the poor of the parish chargeable not to the parish, but to the union. When that Bill was discussed by the Norfolk Chamber of Commerce they passed a resolution to this effect—That those who use those turnpikes should pay for them. And although there may be certain inconveniences and expenses arising from the multiplicity of trusts, yet still a moderate toll on those who used the roads was very much better than throwing the whole of the burden of maintaining the great thoroughfares on the parishes.

Mr. MEIRE said he had had some experience with the turnpike-trust system, and to him it was one of the most expensive and worst-adapted means for the object in view that could be devised. There was no mistake that the assessments of the country would have to be changed for local purposes; and, although the highway boards of the country had not done all they could wish—inasmuch as the Highway Act empowered surveyors to do work for a much larger extent of roads than they were able to do justice to—still if the act would empower the waywardens to be vigilant and look better as to how the labour was expended on the roads under their care, it would be much more successful in its operations, and might prove of great advantage to the country. He was sure that any gentleman who had been in the habit of attending meetings of the turnpike-trust, witnessing its operations, and observing its ponderous and unsuitable machinery, must have been struck, as he himself was, with the utter inadequacy of the system for the object it had in view. His own opinion of the question was that all property should be assessed for the repair of the roads, for nothing else than a county rate would be adequate

for the purpose. It would be no difficulty, he thought, for the House of Commons to bring in a bill by which both towns and counties should bear their proportionate burdens in this expenditure. Agriculture by all means should contribute its fair share; but agriculture at the present time was paying three times its share; and the question to decide was what would be the fair share for districts and counties. These imperial roads had been made for imperial, and not for local purposes; for if they had been made purely to meet local requirements, roads of much less dimensions would have sufficed; but they were made by Government for Government purposes, and it was not just to call upon parishes to bear the burden of that heavy expenditure.

Mr. WOODCOCK (mining agent and surveyor) said he had heard a great deal about the turnpike-trust; but, assuming that the gates were abolished, it seemed to him that the rating capacity of Staffordshire would be the capacity to resort to in that case. Let them take any union—say Penkridge for instance; they would find that in Penkridge there was something like 45 miles of road, and to meet the expenditure for the repair of those roads that union would require a rate, at the rating capacity of 4d. in the pound. If they went to the county, however, where the number of miles of turnpike roads was something like 81½, they would find that they required about 3d., and that would go to show in favour of a large area rather than a small one. Therefore, whatever might be done by local authorities, they should rate at some principle and include large areas and not small ones. He did

not approve of the rating principle; but he was inclined to think that Government might introduce something, perhaps, on the same principle as the income-tax, by which they could assess the ratepayers of large areas for the repairs of the roads, and he was sure all would contribute very much more readily for the keeping in good repairs of the turnpike-roads than they would for an Abyssinian expedition.

Lord LICHFIELD said he for one had no hesitation in saying—that is, if he were to be asked the question as to what was the fairest way of rating for the repair of the roads?—that he could not imagine any principle that would be fairer and better than this system of turnpikes, although at the same time he had as great an objection to them as any one else (laughter). He could not bear the continual stoppages at turnpike-gates, and therefore if any fair and equitable arrangement could be introduced for obtaining an equivalent for loss of toll when turnpikes were done away with—as they would have to be ultimately—he for one should be very glad.

Mr. SEWELL READ said the very first thing the Central Chamber would discuss when they next met would be this turnpike question.

Mr. MASFEN said that he was not prepared at that time to propose any resolution on the subject, because he had wished before doing so to ascertain what were the opinions of others.

The dinner was far more numerously attended, but the more important business took place, as here reported, at the preliminary meeting.

THE FARMERS AND FOX-HUNTING.

At the last meeting of the Hexham Farmers' Club, Mr. C. G. GREY, the President, in the chair, Mr. PATRISON read a paper "On the Injuries that the Farmer sustains in consequence of the Preservation of Game and Fox-hunting." There was no new feature advanced on the game question, the speaker having apparently taken his chief facts and arguments from the pamphlets already published; but with respect to fox-hunting, Mr. Patrisson said: Hunting of wild animals—some of which are now extinct—like the game laws, is a custom or sport handed down to us from very early times, when the country was more fitted for hunting wild animals than it is now. The hunting of wild animals at that time was indulged in partly as a measure of safety as well as sport; it was perfectly appropriate to the state of the country, and to the state of civilization at the time. It is a sport that is indulged in in most countries in a low state of civilization, and where forest and waste abound; but it is certainly unfitted for a country densely populated, enclosed, and cultivated, and where domestic animals are kept in great numbers. I will just offer an illustration by way of asking a question. What would a shopkeeper think if a stock of rats or mice were to be reared and preserved on his premises for his neighbours to come and have a day's sport in hunting them about his shop every now and again? not only his neighbours; but if any or every one assumed the liberty to enter his shop, trespass, and damage anything that came in his way? Yet this is very much the case with the farmer; any one assumes the liberty to trespass and damage as he pleases, appearing to think that the farmer is honoured by his presence, and will consider it a favour to have the fences to repair, and his scattered stock to collect together, with the consolation of having pools of water standing in his ploughed fields in place of wheat. I can only conceive of a farmer reasoning thus, on his return home after a day's hunt, after meeting his young horses on the road two or three miles from home, the sheep nets lying down, and the sheep spread over the turnip field, with a frosty night closing over them, and his ewes somewhere where they should not be, with the prospect of two or three cast lambs among them. Closing his eyes and saying to himself, "Well, we've had a jolly day's sport; rare fun, but there will be a busy day tomorrow in getting all these fences repaired, and what a mess there will be among these turnips after this frosty night! and these ewes—ah, well! I have been rather childish after all." It may be said that I would curtail all sport or pleasure. No such thing. Believing as I do that amusement or recreation

is essentially necessary to both physical and mental development, it is not my business here to devise new and innocent amusements: my only business at present is to reflect on fox-hunting as a sport injuriously affecting the farmer. Amusements of an innocent nature ought to be so conducted as to give the greatest amount of intellectual and moral pleasure to those engaged in them, consistent with the rights and privileges of others; and I think no one can say that he can be engaged in fox-hunting without trampling on the rights of others at every step. Moreover, it is a boisterous, cruel sport, and no one is morally justified in making sport out of any animal, however low in the scale it may be. If the fox be vermin, and ought to be destroyed, it ought to be done with the least possible amount of suffering to the animal itself. It is a sport quite behind our age, and ought to suffer the same treatment as other sports of its class have done, viz., bull-baiting, otter-drawing, dog-fighting, cock-fighting, &c.; it is a great credit to our civilization that these have been allowed to die a natural death, and it is to be hoped that fox-hunting will shortly be allowed to suffer the same fate. I hope it is not understood that I mean to say that all fox-hunters are cruel, boisterous, or bad men; not such a thought is even insinuated. Fox-hunting is a custom that we find in existence. Many people enter into and are carried away by custom, like a stick in a stream, without giving themselves the trouble to think whether the custom is right. Young men especially, full of animal life and vigour, finding the custom supported by respectability, are apt to enter into it with all the zest of a so-called true sportsman, without ever thinking that he is doing any injury to his fellow-men. At the time the other sports I have mentioned were indulged in, the people no doubt thought that they were all right and proper; but with time the tastes and habits alter and improve, and, with superior means of education and refinement, have grown above those cruel sports to which I have already alluded. I admit that fox-hunting is perhaps the least cruel of these named, but it entails most infringement on the rights of others; and we have no right to enjoy ourselves at the expense of any other individual. It may be said that if such sports were abolished there would be no inducement for the landlords to live on their estates; and we would have all the evils of absenteeism. If I thought there was any force in the objection, I would be disposed to give it every consideration, as I think it very desirable that the landowners should live near their own property; but I think there would always be sufficient attraction

THE WEST OF ENGLAND CHRISTMAS SHOW.

The first exhibition of fat animals for Christmas, in the West, took place last month at Plymouth; and it appears to have been in every way a success.

JUDGES.—Cattle: Mr. S. Anstey, of Meanabilly; Mr. W. Coulton, Buckfastleigh; Mr. R. Smith, Southmolton; and Mr. J. Brebner, Windsor. Sheep, Pigs, and Roots: Mr. H. Fookes, Whitechurch, Blandford; and Mr. G. Radmore, Thorverton. The judges were attended by Mr. J. Moon, steward of the cattle department; and Mr. H. Tresawna, steward of sheep, pigs, and the root section.

PRIZE LIST.

CATTLE.

NORTH DEVONS.

Steers exceeding 3 years and 3 months old, first prize, William Smith, Higher Hoopers, Exeter; second, Edward Trood, Bowhay, Exminster.

Steers not exceeding 3 years and 3 months old, first prize, William Smith, Higher Hoopers.

Cows or heifers exceeding 4 years old, first prize, William Smith, Higher Hoopers; second, Henry Davy, Penhole House, North Hill, Launceston.

SOUTH DEVONS.

Oxen or steers exceeding 3 years 3 months, first prize, William Coaker, Charlton Court, Kingsbridge; second, Thos. H. Newman, Coryton, Lew Down.

Steers not exceeding 3 years 3 months old, first prize, George Coaker, Old Newham, Plympton.

Cows or heifers exceeding 4 years old, first prize, William Coaker, Charlton Court, Kingsbridge; second, John Moysey Toms, Coyton, Ermington.

SHORT HORNS.

Oxen or steers exceeding 3 years 3 months old, first prize, James Horswell, Burns Hall, Lew Down; second, William Trethewy, Tregoose, Probus.

Steers not exceeding 3 years 3 months old, first prize, William Trethewy, Tregoose, Probus.

Cows or heifers exceeding 4 years old, first prize, Nehemiah Stephens, Cartather, Liskeard; second, William Trethewy, Tregoose.

HEREFORDS.

Oxen or steers, exceeding 3 years 3 months old, first prize, George Lobb, Lawhatton, Launceston; second, Geo. Lobb.

Cows or heifers exceeding 4 years old, first prize, John Jackman, Meadwell, Kelly, Tavistock; second, George Lobb.

CROSS BREEDS.

Oxen or steers of any age, first and second prizes, Samuel Widdicombe, Hay, Ugborough, Ivybridge.

SPECIAL PRIZES.

Sir T. D. Acland, prize of 5 guineas for the best North Devon heifer not exceeding four years old, William Smith, Higher Hoopers.

Major Strode, prize of 5 guineas for the best South Devon heifer not exceeding four years old, F. Pulleyblank, Ugborough, Ivybridge.

Sir Lawrence Palk, prize of 5 guineas for the best Short-horn heifer not exceeding four years old, Samuel Widdicombe, Hay, Ugborough, Ivybridge.

EXTRA PRIZES.

A Silver Ten-guinea Cup, by the President, Sir Massey Lopes, M.P., for the best ox or steer in the exhibition, James Horswell, Burns Hall, Lew Down.

A Silver Ten-guinea Cup, by Sir William Williams, for the best cow or heifer in the exhibition, William Smith, Higher Hoopers.

Five guineas, by Lord Churston, for the best ox or steer bred and led by exhibitor, Wm. Smith, Exeter.

SHEEP.

Pen of three Leicester wethers, under 23 months old, first and second prizes, James Burston Corner, Longforth, Wellington.

Pen of three wethers of any long-woolled breed under 23 months, first prize, J. Pearce, Langdon, Wembury, Plymouth; second, Wm. Smith, Higher Hoopers.

Pen of three Down wethers, under 23 months, first prize, Wm. Smith, Exeter.

Pen of three Exmoor wethers, under 35 months, first and second prizes, William Smith.

Pen of three Dartmoor wethers, under 35 months, first and second prizes, James Drew, Artescombe, Tavistock.

SPECIAL PRIZES.

Sir Edward St Aubyn, 5 guineas for the best pen of three wether sheep under 23 months, not eligible in either of the classes, Wm. Smith, Exeter. (This prize was subsequently withheld).

EXTRA PRIZE.

Mr. G. Paddon, 5 guineas for the best pen of sheep in the exhibition, Wm. Smith, Exeter.

PIGS.

Pen of three pigs under 9 months, first prize, William Frederick Collier, Woodtown, Horrabridge; second, Samuel Widdicombe, Hay, Ugborough, Ivybridge.

Pen of three pigs above 9 months and under 16, first prize, Sir Massey Lopes, Maristow Ugborough; second, Robert Nicholls, Lostwithiel.

SPECIAL PRIZE.

Messrs. Snawdon and Reed, 5 guineas for the best fat pig of any age, J. Sydney Davey, Redruth.

EXTRA PRIZE.

Mr. W. B. Thomas, Great Western Hotel, Plymouth, 5 guineas for the best pen of pigs under and above 9 months old, Sir Massey Lopes.

ROOTS.

For the best six roots of mangold wurtzel, first prize, Thos. Parnall, Antony, Cornwall; second, James Horswell, Lew Down.

For globe mangold wurtzel, first prize, Thomas Parnall; second, J. Sydnay Davey, Redruth.

For swede turnips, first prize, Thomas Mills, Penquite, St. Sampson's, Cornwall; second, John Stephens, Saint Budeaux.

For common turnips, first prize Robt. Nicholls, Lostwithiel; second, J. Sydney Davey, Redruth.

For field carrots, first prize, Robert Nicholls; second, J. Sydney Davey.

For cattle cabbage, first prize, Robert Pedler, Sherford, Kingsbridge; second, J. Sydney Davey.

Best collection of roots of all the classes, prize, Robert Nicholls, Lostwithiel.

THE REPEAL VERSUS THE NON-REPEAL OF THE MALT-TAX.—At a meeting of the Penrith Farmers' Club held last month, Sir H. Vane in the chair, to consider, among other questions submitted by the Central Chamber of Agriculture, that of the repeal of the malt duty. The discussion was opened by Mr. Jameson, who thought the meeting should not give an opinion in favour of the repeal, as if the malt duty were repealed the Government would simply put the amount on property or income, both of which had enough to bear already. The Rev. J. Lowry, while advocating the repeal of the duty as in accordance with the tendency of legislation during the past 20 years, thought that the meeting, while recording its opinion in favour of repeal, might intimate to the Central Chamber its belief that at the present time repeal would be inexpedient. After a good deal of discussion the chairman put the question—repeal or no repeal—when a majority decided against repeal!

ANOTHER BOARD OF AGRICULTURE.

BY A PRACTICAL FARMER.

The oldest farmer now living cannot remember a period of greater anxiety and perplexity, than the farmers of England have had to pass through, than during the past three years. It was not from any undue depression of prices of farm produce, or great political or social changes damaging to their interests, but solely from a very severe Providential visitation, which desolated their farmsteads and grievously affected their field cattle; hundreds of thousands of fine cattle succumbed to the dire pest, and that without remedy. The whole country sympathised with the suffering cattle-owners: meeting after meeting was held everywhere; but no one knew or could suggest what was to be done "to stamp out the disease." Deputation after deputation, memorial after memorial, was appointed in great number; but no one could say to what official or office the one should attend, or the other be sent. Now it was to the Prime Minister, now to the Home Secretary, then to the Board of Trade, others to the Chancellor of the Exchequer, mostly to the Privy Council; all was uncertainty, all was perplexity: little or no impression was to be made in any quarter, till the sore infliction became a national calamity; then the "cattle plague" was taken up by the whole Government in earnest, but too late to be of immediate service. On it travelled, amidst contradictory orders and surprisingly absurd restrictions, arriving at last to the only true preventive-cure—the polioaxe. It is proved beyond dispute that this pest was of foreign introduction, and upon its discovery there was no truly responsible body or department of Government to whom the discovery could be made known and prompt action taken; but the Government must be called together, the Privy Council must be summoned; then discussion after discussion took place, and it was long before positive orders were given to stem its progress, if possible, and that by immediate slaughter. Every one knows the evil caused by this delay. Now, if a Board of Agriculture had been in existence, with power to act promptly, according to correct evidence and circumstances, an immense saving to the country would have resulted, and an amazing amount of anxiety and care felt by cattle-owners and others relieved. I scarcely need say we want a Board of Agriculture to watch over these things, it is so self-evident. It would be the duty of the board to institute and uphold a correspondence with British Consuls and Government officials in every quarter of the globe, in order to receive the earliest information of anything that might be prejudicial or beneficial (for this board should aim at doing good as well as to prevent evil), and act upon it ere it became known to the public. In this way by careful watchfulness many fatal diseases may be kept out of the country, and much doubt and uncertainty dissipated. It would require the utmost care and promptitude. Railroads now extend beyond European frontiers, and are daily becoming more numerous, so that all Europe and parts of Asia are within a comparatively few hours' reach of our shores. To regulate our foreign importations of stock effectually and to prevent the inroads of foreign diseases, if practicable a Board of Agriculture is indispensable. But further, the whole agricultural body are at a loss or at fault for the want of some responsible head, some influential and powerful "board," to which they can submit their grievances, their difficulties, their distresses, their wants, their suggestions, their hopes—yes, and their expostulations. There never was a time in the history of this country when its agriculturists were more in earnest and

more intently looking after their interest in every way than at the present period: it combines every department of their affairs and business; it comprehends agricultural improvements of every kind relative to farm management; it includes all political subjects connected with an improving or modern agriculture, all disabilities and liabilities imposed upon their business or their interests by Parliament, all useful measures withheld which might tend to their benefit. They have become highly sensitive to any injustice in taxation under which they are burthened and to any contemplated restrictions or impositions. The questions or subjects before them are very many, some of which I will name; *i. e.*, the exclusive burdens on land or real property, that is to say, tithes, poor-rates, highway rates, land tax, county rates, and rural police taxes pressing upon produce, *i. e.*, the malt-tax, restrictions upon the growth of tobacco, the manufacture of beet-root sugar, requirements, preventions, and prohibitions of various kinds, requiring alterations; tithe averages, game laws, uniformity of weights and measures, tenant-right, law of distraint, sale and transfer of land, drainage, road reform, national rating, church rates, and turnpike trusts. Then, again, they have the new projects of restricting women and children employed in agriculture; the prevention of women and girls from field labour, or under certain close limits; the education of children employed in agriculture. I look upon a Board of Agriculture to be a board expressly to aid, guide, and protect the agriculture of the kingdoms.

Now, we have in the United Kingdom no less than 876 agricultural societies, besides our great ones, *i. e.*, the Royal Agricultural Society, the Royal Dublin Society, the Royal Agricultural Society of Ireland, the Highland and Agricultural Society of Scotland, and the Smithfield Club. We have the head Farmers' Club and numerous other Farmers' Clubs. We have the corresponding chambers of Agriculture, with the Central Chamber; then we have the Total Repeal Malt-Tax Association, the Home Cattle Defence Association, and others. These are all, in one way or other, exerting their energies in promoting or protecting the agricultural interests of the kingdoms; these all require some central board, to which they may approach with confidence that their requests or representations will be favourably received and considered. It may be replied that most of the societies above-named have not, nor do they seek to have, any political status. I am happy to say that such ideas are quietly giving way, and that if any important matter connected with their interests is afloat, they take up the question at their meetings, and action in one way or other is taken, if not directly through these societies. We have a Board of Trade, and the President thereof professes it to be a Board of Agriculture too. Why, the one is incompatible with the other, and the two interests are frequently in opposition! Trade requires everything for its consumption at a low rate, Agriculture can't afford it: the one fights the other. It is ridiculous that one board or one president, be he ever so ubiquitous, can at all times help both interests; no interest so important or so wealthy as the agricultural interest, and yet it has no political head. We undoubtedly require, I repeat, an independent board, to watch over our interest.

[The re-establishment of a Board of Agriculture has long been advocated by ourselves, as well as by some few of the Farmers' Clubs].

THE NEW FARM.

For the life of me I cannot set hands upon the letter of old Bates regarding Shorthorns, that I promised to quote. Somewhere it is safely deposited, and will certainly turn up, unless our hopeful hath, in the absence of his fond parent, made spills thereof. This cannot be, though: the colt is better trained; so we will hope and proceed.

"Farming this land, sir," said an observant old neighbour to me lately, as we stood upon an arable slope of light brahy sandstone soil, "is like farming a sieve," strewn with some temporarily absorbent material. Just so long as you can secure the use of the layer in an inebriated state, you ensure a paying crop of grain; but then the virtue is so evanescent. There is a tide in the affairs of—soils, &c. Once let the occasion pass, and your seed-bed is worthless as the vapid draught of a three hours' uncorked soda-water drink. So have ingenious spirits grown salad vegetables, such as mustard and cress, on the surface of moist flannel. The great secret of managing this soil is, soak it well and sow it soaked: certain then will be the remunerative return. Ah, bless them clay lands," he continued, "on which the clover thrives so bountifully; we can't get it no how on these rubbishy sidelands, leastways as a permanent resident. It's a hop-and-go-one plant with us at best—now here and now here a leaf. Dash these light soils! them quite beats me, they do." Dash them! we remark remonstratively, in regard to the increasing vehemence of his expressions—dash them! pray with what? "Dash, sir? why excuse me, but I meant it metaphorically. However, as you ask me the question, dash them, as the gardener does his young pear-tree stocks, to keep the sheep and rabbits off, with a coating of thick muck-mud, and in that plaster compound sow. It is in the production of this prolific compost that our heavy Cotswold flocks pay to fold, so much more than the sweet juicy Southdowns of which you are so fond."

I have been much interested lately in the study of an adjoining estate, which occupies, as it were, a peninsula of some miles in extent, all but surrounded by the winding of our wayward river. Raised from the bank on either side, it has for its highest part a ridge of sandy gravel, pounded pudding-stone, and the like; while in the very next field there is a wide bed of blue limestone marl, and just beyond, again, a red sandstone layer. This present height has clearly once been the bottom of an estuary, subsequently heaved up by volcanic action; and these so different soils are simply deposits made by the tide at different points of the shore. It is strange to think this now, as one stands, gun in hand after game, amidst a grand grove of old pines, like the wood of Ardenne, which stud the ridge as spines upon the back of a monster lizard species, and feel the cutting wind sweep off a landscape reaching away in view of a good fox-chase. Fortunate, however, is the proprietor, for he has there closely accumulated the materials of a rich soil, which only requires to be mixed by a master hand, as his is, to ensure success in the growth of a cereal abundance. By dint of carting the blue marl, during the slack season of the dark months, on to the gravelly tract, he has given it a fertile consistency that has this year enabled it to throw 44½ bushels of wheat to the acre, and that in a district where we are thankful to obtain 35 as a rule. The money-value of this single crop was equal to forty years' purchase-

money of the fee-simple of the ground itself, taking the rent as it stood when the farm came into the present cultivator's hands. The stubble is now being ploughed about ten inches deep, and will be again dressed with the marl; the consequence of which will be that, after the frosts have done their part, there will be a permanently-established loam of golden value, within forty yards of the pit from which we neighbours haul a hungry, sparkling quartz gravel, to strew upon our garden-walks.

The burnt surface of an old, foul clover, or rather couch ley, which I had pared and just done brown (mind, the red-brick tint is a sign of lost strength, owing to the fires' having been too vehement), in large, slow fires, built on a pile of thorn-stumps that were excavated from a hedgerow which I have found it expedient to level, with a view to dividing the farm proportionately for rotation of crops, I find, as I had anticipated, does admirably under the fattening pigs, in a bay of a disused barn. There is already a thick floor of fat stuff, richly soaked as a Yorkshire pudding (for I had it hauled in during sunshine, in a thirsty state), which, pulverized, I shall drill in with the turnip-seed, thereby escaping the ruinous artificial-manure drain. One effect took me by surprise, although, of course, had one given the matter a thought, it was an effect simply to be expected; and that was that, whereas, before we used these ashes to strew the floor with, I found it impossible to approach the pig-lodge, much less to stay near it any time, owing to the pestilent effluvia that met one's nasal organ, why now the most delicate lady might stand by, and admire their sleeping highnesses, without the least offence whatever, this desirable result being due to the deodorising quality of the charcoal-dust pervading it, and which came of the thorn-stubs that I mentioned above as built in for fuel, to start and help the fire. You may really stand, now, right in the centre of the sties, and be as unaware of the vicinity of an animal whose only fault is his smell, as though you were in your "parlour, counting out your money."

I shall take the hint, and, for the future, use plentifully an agent so easily obtained, the value of which is so great, as I see by a little work on "Antiseptic Treatment," which I had recently forwarded to me, bearing on this very subject. A few remarks therefrom, which interested and taught me, I quote, in the hope that they may be equally serviceable to others: "Farmers should never deeply cover up manure, so that the air cannot freely unite with it; for if the air have not a free circulation within the manure, it perishes, and produces more injury than advantage" (?). "Farmers should always mix burned earth, peat, or charcoal with their stable manure, as charcoal retains the essential properties contained therein, and prevents its escape until it is ready to be put on the land, when the sun will liberate it." "Charcoal put into a tank will purify the water." "Farmers who raise stock should mix charcoal plentifully with their food." "Charcoal strengthens and heals the mucous membrane throughout the alimentary canal, and increases the power of the digestive organs, healing any unhealthy condition existing there: it prevents worms generating in the stomach, and absorbs the putrescent gases by which they are generated, and they consequently die." "All kinds of stock will freely eat charcoal and salt mixed with their food, and they will greatly increase in weight by the free use of charcoal." I have long known that it answers well to keep a heap

of cinders in the corner of a sty. Pigs will crack them like nuts, and chew them "to their advantage," as Joseph Ady would say. Our author further recommends the top-dressing of potato and hop plantations with charcoal or peat (charred I presume) as a preventive against blight and the fly. Charcoal put into a glass of water with an acorn or root will prevent the water from perishing or becoming putrid, as it would otherwise do, and the acorn will grow therein and become a small oak. "Should a joint of meat smell when put in the pot to boil, if a piece of charcoal be put in the water the meat will become sweet." "A piece or two of fine charcoal put into a parcel of game will preserve it sweet." Should "a joint of meat smell, rub fine charcoal on, and it will turn it sweet." "Again, florists and ladies who love beautiful flowers should always sprinkle charcoal on the soil, as it will create in the flowers the most delightful hues and brilliant colours."

The discovery "of the uses of charcoal in the various forms of disease" our author disclaims, and attributes to Moses, who has "recorded its virtues in the scriptures;" inasmuch as he directed the Israelites to put on sackcloth and ashes when they had "brought themselves into an unholy, unhealthy state of body. The sackcloth was an open coarse kind of linen, and the ashes were burned wood, commonly termed 'charcoal.' This had a healing and restorative effect on the unhealthy body, by changing its impure conditions." I remember Mr. Frank Buckland making a similar remark with respect to Mr. Moule's patented earth closets. Did not Moses send

the Israelite with a spud out into the wilderness? And so there's nothing new under the sun.

The gardener has just shown me several pots of young pelargoniums, the result of our hybridising last summer. I wish I could just hook and haul in next June for an hour, that I might see what sort of blooms will reward our labour; I should then ease it to its place again amidst the hot months, for there is much of winter enjoyment yet 'due that one were loath to spare; e.g., the Christmas parties, the gallops across country, and the afternoon saunter on our fresh-littered fold-yard. But by the powers! I must be off; for there is an uproar in the nursery: and when I get there I find the two youngest boys, despite the cold of this frosty night, larking about and playing like kittens, as naked as they were born; but at the sight of myself there is a bound to the bed-clothes and a dive into night-shirts and a plunge into sheet-lane, as though they were aware that therein lay their only chance of an effective rear-guard; and so we could not but laugh ("in'ardly, werry in'ardly, my lord"), and tuck them in, and return to our toil in the study.

"Good news from home!" the bailiff has just hurried up to say that at last, after much waiting, we have been rewarded by the birth of a heifer-calf from a valuable Towneley cow, which upon the spot we christen Lady Culshaw, in consideration of her belonging to the eminent Joseph's favourite Barmpton Rose tribe, and of her not exhibiting a black nose, a tint to which we always understood him to be averse until the recent turn of his Oxford studies.

VIGIL.

DAIRY STOCK: YOUNG STOCK: WHEAT-SOWING.

At the usual monthly meeting of the Ballymahon Farmers' Club, the Right Hon. L. H. King Harman in the chair, the following paper was read by Mr. JAMES LUNAM, land-steward, Newcastle:

The subject allotted to me has been stall-feeding, the management of dairy stock, young stock, and wheat-sowing. As this subject is too extensive to be treated in a short paper, I shall confine myself to stall-feeding only. As every subject brought before us in this society should be considered in its relationship to farming, I shall endeavour to see its bearings in this respect, and also its relationship to pocket. First, the necessity for stall-feeding. Although the soil of Ireland is naturally adapted to the feeding and fattening of cattle, yet the farms suited for the finishing of them are few when compared with the vast numbers that are unsuited for that purpose. There are multitudes of farms which will answer for the rearing of young stock and the keeping of stores; but fat cattle cannot be turned off them unless they are put into the stalls. It has always been my idea that every farmer holding from 50 to 100 acres should finish his own cattle, in order to make farming pay. To rear young stock of a good description, to have all the trouble of rearing them through their critical periods, and to sell them when they have arrived at nearly the point of paying well, it may be in a condition thin of flesh, is very foolish indeed. Half the trouble is lost, and the farmer is struggling to get forward, but cannot tell why. He says he is industrious, careful, and painstaking; but yet to make the rent is still a difficulty which he cannot understand. There is something lacking. He may possess perseverance and be industrious; but it is possible to have these good and necessary qualities, and yet not succeed. The great requisite to farming is knowledge and the application of it, which are most essential in the management of stock, in order to make them pay. If it be necessary to keep horses and pigs until they come to the proper age and condition, so as to be remunerative, so must it be necessary to keep cattle until they are ready for the butcher. The good farmer makes his farm a nursery for young stock, and will retain them till they come to the profit. But how is this to be done if the land will not fatten? We answer, by

stall-feeding. There is a season of the year when grass-beef runs out, and stall-feds are necessary to meet the supply; and if they are ready for that period, being properly finished, they generally pay—especially the farmer who has reared them. A gentleman of note and property in farming says, when speaking on this subject, "If you want to succeed in cattle-farming, rear everything you require, feed well and regularly all you do rear, and always be supplying the markets with fat stock." Those who are compelled to sell their rearings in a poor condition are always building beneath the surface, and the superstructure never appears; their toil and labour have gone for nothing, and they are always disappointed, because they lack the knowledge of putting on the fat. There are two things in cattle which always pay well—good bones and plenty of covering. The combination of these two things never disappoints the farmer. In order to put on the covering, there are some things necessary to which we shall refer. Good turnips are requisite. If the farmer is not able to grow good crops of turnips, he need not attempt to feed cattle in the stalls. The land designed for this crop should be ploughed early, and properly pulverized; the manure of the best description, combined of both the farmyard and artificial; the seed properly selected, and early sown; and the after-treatment according to the best husbandry. There are some who manure the land well with this crop; but there is neither pulverization of the soil nor proper treatment afterwards. Such should not think of feeding cattle in the stalls, as they will always be disappointed. An amateur farmer being asked by a gentleman why he did not sow his turnips earlier, weed, thin, and hoe them in the proper time? replied by saying, "That he desired to keep them for the table, and did not wish them to grow too large." His table must have been difficult to supply, as he had some three acres sown that season. The farmer who wishes to make money, pay his rent, and give his creditors nineteen shillings eleven pence four farthings, will grow his turnips for the stalls, and not for the table. The table turnips will lead to many difficulties, poverty, and bankruptcy; but the stall-feeding turnips will not only put on fat for the butcher, but pecuniary fat on the farmer. It is amusing to

hear how well some of the amateur farmers not only grow turnips, but manage their farms. Men of long experience in agricultural attainments might sit at the feet of these Gamaliels, and learn how to do everything well, according to their estimate. They are always talking, always teaching, always propounding new theories, always taking agricultural flights, always failing, ever soaring with the wing of an eagle, yet falling like a goose. We have heard of a Yankee servant, at an American hotel, saying to one of our first lords of England—a nobleman of immense wealth, brilliant talents, and a leading position—"Are you the man who wants the car?" His lordship replied by saying, "Yes." "Well," said the servant, "I am the gentleman who is to drive you." These amateurs, or, rather, would-be farmers, are the gentlemen who are to drive the men of experience. They are wise in their generation, always tenacious of old customs: what their thirty-second great grandfathers did should now be done. What was good farming in the sixteenth century is equally good in the nineteenth. They design to grow large turnips for the stalls, and they turn out to be for the table. This class of farmers will find their mistake, perhaps, when it is too late; and so long as they are determined to be proof against teaching, and succeed in growing only table turnips, they must not mind stall-feeding. To have prosperity in this department of cattle farming, it is of the utmost importance that good turnips should be produced. This is the first step in the direction of success. The proper management of cattle in the stalls, so as to make them pay, is not a simple element of farming, but, to use a chemical phrase, is a compound element, implying many other things done in the best manner. While turnips, however, are necessary, good hay also is essential. In consequence of so much water being in the turnip, it is wise to have the best hay, containing the largest amount of dry matter, so that there may be the proper equilibrium kept between the one and the other. For cattle in the stalls, receiving about one cwt. of turnips per day, the best hay, if it can be procured of the proper description, is the first crop after laying down the land in pasture. Force grass, hay cut, and saved with the sap, having all the seed on it, is much more nutritious both for horses and cows, and is especially valuable for the stalls. Old meadow hay, cut with the sap in it, is very good, if it has not been too long exposed to the weather inmaking; but a large quantity of the hay we have seen in this country gets far too much of the weather. It is so saved that it has lost a large portion of its nutriment and its sweetness, as much of its colour is gone. This is one of the reasons why we see so many poor cattle at May. If, however, the old meadow hay has been kept sweet, not too much exposed to the weather, it will suit well for the stalls; but we much prefer the force grass. The farmer having produced good turnips and good hay, must next look for the proper description of cattle; and whether he rears or buys-in ready for the stalls, knowledge is necessary to make his work a success. If cattle are reared for the purpose of finishing in the stalls, they should be of the best breeds, and from the best bulls; they should be regularly and well fed, and all the materials given to them in their food should be of such a nature as will go to the production of bone, and thus, having got a good frame of bone and muscle, with health, the next point is to get them properly covered. If, however, he has to buy his cattle for the stalls, knowledge and care are necessary for their selection. We have heard of two amateur farmers who went to a sale to buy heifers, and they bought them; but they forgot it was necessary to distinguish the sexes; but whether they had not knowledge to do so, or considered it unnecessary, being, no doubt, as they were, a little diffident, the heifers turned out, to their sad disappointment, bullocks. In selecting cattle for the stalls, knowledge and watchfulness must be exercised. It will not pay to buy poor cattle and then put them into the stalls; they ought to be in proper condition, else the good turnips, hay, and oats given will be comparatively lost. Large, half-finished cattle, whether bullocks or heifers, having loose skins, not hide-bound, will never disappoint if properly attended to. The turnips, hay, and cattle produced, the next thing is proper attention. When put into stall, a small quantity of turnips should be given at first, and the quantity gradually increased to about 1 cwt. per day for the medium-sized, and 1½ cwt. for the largest. They should get as much hay mixed with some fresh straw as they will eat after each seed of turnips, given in such quantities as not to lie before

them until the following feed. If the hay lies before them for any length of time they will not eat it, as the smell of their breath prevents them doing so. It is bad policy to place before horses or cows too much hay, or even to keep it where it will catch their breath. A farmer of the smaller type, both in brains and land, told me that when buying straw for his cow, two stooks given to her at once was the best policy, as it lasted her as long as six stooks given in smaller quantities. This, we believe, was a fact; for the smell of the breath fouled the straw, and prevented her from eating it. It is wise to feed the cattle on a little hay or straw first in the morning, as much as they will eat; then follow with turnips, having a little cracked oats shaken over them. In the middle of the day the same process should be repeated. Except after giving the turnips, we would mix the cracked oats with a little bean-meal. In the evening a similar process; thus repeating it three times a day until they are finished. A good material, mixed with some cracked oats, given at night, is flax-bolls. Oilcake has been much prized, but flax-bolls are superior, as they contain all the oil, the very substance we want for beef. Many have been disappointed with the flax-bolls, from the injudicious way in which they have been administered. If they have been given in such a way and in such quantities as to produce a relaxed state of the bowels, the cattle cannot put on flesh; but if they are given with proper astringent food, such as bean-meal, to counteract their effect on the bowels, they form a most valuable ingredient in stall-feeding. There cannot be too much care in watching the state of the bowels, so as to keep them perfectly regular. From irregularity in feeding proceeds irregularity of the bowels, which is one of the causes of disappointment in this department of farming. The farmer should always exercise the utmost watchfulness himself; not leaning upon the reports of his servants who attend them. If they are costive, give them a little more turnips or laxative food; if the opposite, less turnip and more dry food. They should be kept exceedingly clean, as no amount of good feeding will compensate for want of cleanliness. The skin brush should be well and frequently used, the houses well cleaned and dried, with plenty of good, fresh air admitted, without draughts. It is not wise to keep them too warm, lest disease be generated and the feeding lost. They ought to be kept comfortable, with proper beds, without draughts or currents, as everything that tends to comfort tends to beef, and if they are thus properly cared we will not fear the result. In the preparation of the turnips and hay, knowledge and care are necessary; in the rearing and selection of cattle, knowledge and care are necessary; and in the application of the food to them, knowledge and care are particularly necessary. Therefore we ask, in what department of farming are knowledge and watchfulness not necessary? For want of these two things much of Ireland's farming has been a myth, the success and comfort which her inhabitants might have enjoyed arising from the superiority of her soil more imaginary than real, and her pauperism a byword amongst the nations of the earth. It matters not how careful a farmer may have been in procuring the materials for stall-feeding, and how careful he may have been in the selection of the cattle, if he neglects to look well after them until they are in market. If there be neglect anywhere stall-feeding will not pay. Ignorance in agriculture has killed its thousands; but negligence its tens of thousands. Pride and negligence are always associated together; and when a farmer is above his business, he is generally lazy and indolent; therefore, everything that he attempts is a failure, and will not pay. There are some farmers so indolent, that if the Divine Being should bring their food to them, as the manna was brought of old, they could not think of having the trouble to prepare it; and if it were brought prepared for them, they would consider it a trouble to eat it. We have heard of the climax of laziness, described by an anecdote of a gentleman and his servant, who was too lazy to pull out his own pocket-handkerchief, and ordered his servant to apply it to his nose; and when the servant did so, he said, Blow. Alas! we have many farmers of such a description, to whom stall-feeding, as well as every other department of farming, has been a disappointment. We shall now try to answer the main objection to stall-feeding, that it does not pay; and from what we have said, the reasons why it will not pay may be inferred. There are some who wish to get on with it, and make it pay, but they cannot; and why? Because, as we have said, they go through with it as they do with every-

thing else, as if life were not a reality, or as if man had not to earn his bread by the sweat of his brow. Men of knowledge and energy, with prudence, unless there be some providential disappointment, will make everything pay; and we affirm, if it be carried out in the way I have described, it will succeed. But what are some of the reasons of its non-successfulness? I have known some putting their cattle into stalls, feed them until they were about half-finished, and, from want of materials, sell them in that state. That method never yet paid nor never will. A half-finished article of any description will never pay: the profit goes to those who buy it and complete it. To put cattle into the stalls when there is not enough food produced to complete them, and sell when they have taken with the house just put in proper condition to pay, is consummate folly. Another reason why they do not pay is, because their bowels are not watched. I have to speak thus plainly, lest by any ambiguity of language I may be misunderstood. I was asked by a farmer one morning to look at his cattle in stall, which were not putting on flesh, and he did not know why, as he was giving them the best food. When he raised them, as I entered the cow-house, they presented to me such powerful reasons why they were not thriving, that I was compelled to fly out of the house to keep my coat clean, and thus wait outside until they had all done reasoning, as I thought their arguments too potent to resist. I answered my friend, that cattle in such a state would only break a substantial farmer, and that he should so regulate their food as to make it not to them medicinal. Another reason why stall-feeding does not pay is, because the cattle are far too poor when housed. If thin of flesh, it will require a large portion of the winter, and consume a great quantity of food, before they are brought even to that condition in which they should have entered the stalls. An experimentalist once told me that he put in two bullocks very poor, and after exhausting all his food, he was compelled to sell one of them to support the other, and that it took all the money he got for the one to buy food to finish the other; therefore, he said, he was not paid. However it may do in nature for one bird to live upon another, or one fish to live upon another, it will never pay for one bullock to eat another. Such men who act in this way will never succeed in anything; like dead fish, they always go down the stream; whereas if they had life, vigour, knowledge, and prudence, they would take their salmon leaps up the currents, and over the ramparts, to pecuniary comforts, if not to pecuniary eminence, no longer contented with their bullocks eating one another. Tell me not, objector, that stall-feeding will not pay; we have frequently tried it, and by growing the proper material as food, carefully selecting the cattle, and seeing them properly attended to, we have made it a most fruitful source of good husbandry; but, like everything else that is successful, there must be care and perseverance until it is complete. It has many advantages; and the principal one is, the consumption of the hay and turnips in the farmyard. The manure produced is just as rich as the feeding is good. Farmyard manure rises or falls in value just as the feeding has been rich or poor. The manure of stall-feeding cattle is the richest, and consequently the most valuable of all manures. Take it to the poorest soil, and no matter what the crop, it will show its superiority to all other manures. Thus, by the stall, a large quantity of excellent manure is obtained, green crops of the finest description are afterwards produced, oats giving a large return, and, if the proper rotation of crops be observed, clover hay in succession, not inferior to any of the former. There is, and we are happy to see, a large consumption of artificial manure; the farmers are getting alive to the importance of applying the manures; and just as good manures are highly valued, so will stall-feeding be valued, as so much is produced for the enrichment of the soil. Another advantage is the bringing of cattle reared on the farm to perfection. If the farmer can manage to rear as many cattle each year as his farm will afford to sustain, until he has a succession of these, always turning them out of the stalls when they are three years old properly finished, he will reap the full profit, and have that comfort and satisfaction, so far as material things can give such, which the judicious management of stock is calculated to impart. Let the amateur farmer who wishes to excel in all the departments of farming learn not merely the knowledge of cattle, but farming in general; and let those who always like to be a century behind by aside their hereditary prejudices, and apply themselves

thoroughly to the acquisition of agricultural knowledge, and then their stall-feeding will be a success. As Dr. Hodges has well said, one great obstacle to the improvement of agriculture is the custom which yet too commonly prevails of regarding it solely as an art requiring merely a certain amount of practical skill for its successful prosecution; and whilst the vitriol manufacturer, the bleacher, the sugar-refiner, and the dyer are conducting their processes in strict accordance with scientific principles, and whilst every year new applications of chemical knowledge enable them to work with greater certainty and economy, the manufacture of food, by far the most important to human existence, has been left to the discretion of men utterly unacquainted with either the materials upon which it is their business to operate or the conditions required to render their work successful; whilst in the factory and the manufactory not only the managers are familiar with all the processes of their art, but the workmen are carefully trained in the duties allotted to them. How few of our food manufacturers, from the cottier, whose little garden grows potatoes and cabbages, up to the proprietor whose farm of some 100 acres contains plants of different habits, that require a variety of food and treatment, are yet in possession of that special knowledge which their occupation requires! It has uniformly been found that in all professions the men who are most successful are those who have most carefully studied the principles of their business; and why should it be different with the agriculturist? There was, indeed, a time in the agriculture of this country when the virgin soil gave its fruits without much skill or intelligence being required for its cultivation; but that time is gone by, and our exhausted fields and sparse population require that the farmer who desires to support himself by the profits of his produce should make himself acquainted with the conditions upon which the successful cultivation of his various crops depends, so that he may increase the amount of food produced upon his farm at the least possible expense. Thus as the greatest amount of food is produced at the least possible expense, the greater number of cattle can be successfully turned out of the stalls. To prove that this department of farming will pay, we are compelled to go back to first principles, beginning with the farmers' education; and if that education is varied, and of the right sort so that large quantities of food can be raised upon the farm, stall-feeding will pay proportionately. From the specimen of farming which we see, the inference is clear that much knowledge is yet required. Tailors must be trained, and serve their proper time, as some men holding farms are far more particular about the cut of their coat than the state of their fields. Professional men must undergo a long, expensive training before we will venture to commit ourselves or cases to them; but the farmer commits his farm to his son, who has received no training. This ignorance upon the part of many has led to farming by proxy. Every man who has to live by farming should know how to do his own business, as we shall afterwards hear from the paper on the dignity of labour. What would you think of the man who called himself a tailor, and yet he could neither cut nor sew? or the gentleman who called himself a doctor, and yet could not tell the state of a man's pulse, or give him a prescription for the hiccough, unless through another? Yet there are farmers who can neither plough, reap, sow, mow, stack, nor even tell others how these things are to be done, and whose knowledge of stock is of a similar description; yet they call themselves farmers. No wonder that stall-feeding in the hands of such has never paid. We have now looked at stall-feeding and farming, as we said at first, in their relationship to each other, and we trust the agricultural societies will give a stimulus to all farmers, both old and young, to the acquisition of more knowledge. Agricultural societies have done much to improve the condition of Ireland, as well as England and Scotland; and we are persuaded the good they have accomplished is but a small instalment of the future; and from the progress that has been made in the past, we can predict a prosperous future, notwithstanding the tenacity with which many cling to their old habits and ways. There are some men who like to be a century behind, and who are a drag upon the wheels of agricultural improvement. But as the good example as well as the bad is infectious, we are convinced that the good example of farming societies will be infectious, and amidst much opposition and discouragement they ought to persevere, as the fruit of their labours will be

reaped by after-generations. The Irish agricultural societies have yet been building much beneath the surface, and, like the little coral insects that build away deep down in the ocean for centuries, unknown and unseen by man, yet gradually rise to the surface on the coral rocks, appear on the surface of the deep, which, retaining the sand washed upon them by the spray and angry waves of old ocean, become islands where birds have deposited seeds, and, such growing, these have formed attractions as habitations for men—the work of the little coral insect. Agricultural societies in Ireland, like the coral insect, have been long building beneath the surface; but their work, like the coral reef, is making its appearance, towering above the angry surface of difficulties, opposition, and prejudice; and will, we doubt not, tell most powerfully upon the future of Irish farming, combining with other ameliorating agencies to make Ireland what we would all desire—

“Great, glorious, and free,
First flower of the earth
And first gem of the sea.”

As Ireland is a cattle-feeding country, nothing will tend more to increase her material prosperity than the improvement of her stock; and nothing will tend more to enrich the farmer than his turning out his stock reared upon the farm properly finished for the butcher. Therefore we say—

To the stalls, to the stalls, with our cattle we go,
To put on the flesh, and make them all grow,
Big, fat, and plump, that they may appear
Both shining and full when brought to the fair.
The farm may not fatten, for bad is the grass;
Our cattle we stall, that there be no loss.
The young stock are reared, and thus made to pay,
By the farmer's productions of turnips and hay.
To lay in for stalls requires knowledge and skill,
That the cattle may thrive and be fat to kill.
When the hay and good turnips are finished at May
Is the best time for Dublin's large market to pay.
To sell the materials, the objector may say,
Will give you less trouble than eating the hay.
It's by trouble we rise to position and wealth,
Although some prefer to obtain such by stealth.
To the stalls, to the stalls, if you want good manure,
For benefiting the farm, and making quite sure
Of the following crops to be rich and good,
Thus cheering the hearts and cheapening the food.
To the stalls, to the stalls, we surely should go,
That by receiving full profit the farmer may know
The fattening of cattle is the best way to pay
For all his big turnips, his oats, and good hay.

THE LAW OF PAROCHIAL ASSESSMENT.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Knowing the great interest you take in all things connected with the agricultural interest, must be my excuse for asking the favour of inserting in your very valuable Paper a few remarks upon the paper read last night by Mr. Startin at a special meeting of the Midland Farmers' Club, at Nock's Royal Hotel, Birmingham. This was on the question of the Law of Parochial Assessment as affecting the Agricultural Interest. Mr. Startin gave a very elaborate history of the way in which the rates for the relief of the poor had been raised, from the time when the *whole* charge was thrown upon the revenues of the Church and private charity, to the *present time*, and threw out a suggestion as to the way in which they should be raised in *future*. So far as I can understand the paper and the discussion which followed, any practical mode of remedying the present unequal mode of assessment was left a blank.

With regard to the *past*, we may as well dismiss that with the remark, “What has been cannot be helped;” and we can only profit by our knowledge of the past by trying to avoid what we consider its errors.

For the *future*: As to the suggestion of throwing the maintenance of the poor on the revenue of the State, so that ALL may bear a share of the burden, I think that would be a very objectionable way of dealing with the subject, and one not very likely to be carried out. First, because it would lead to a system of centralization, which ought to be avoided, both on account of its expense and its taking out of the hands of those who pay, any control over what they do pay; and, secondly, it would remove from the owners of real property a payment to which I think they are fairly liable, in consideration of their not being charged with succession duty, which is paid by personal property, and which often amounts to very large sums in cases where it passes to distant relatives.

If the Midland Farmers' Club had advocated the removal of the inequalities of the present system of rating,

and tried to get *all* property of the same value rated alike, and all property not at present rated, or only inadequately so, such as woods, plantations, mines, &c., they would have had something before them that was practicable, and they might with justice ask, when this was done, that all other rates than those expressly for the relief of the poor (such as county rates, police rates, highway and turnpike roads, &c.) should be borne by the country at large, because all are equally interested in having good roads, efficient police, and the due punishment of crime. (And I believe if the police rates were paid by the State, it would not go on long before there would an inquiry into the way in which the police are employed in the rural districts, viz., whether their being employed as organized game-keepers is for the benefit of all classes alike. That they will continue to be so employed will doubtless be the case so long as those who are most interested in the preservation of game have the administration of the law, and are virtually the masters of the police.)

The inequality of the rating is a point of the greatest importance. Suppose farms, for instance, in one part of a union where no reservation of the game is made by the landlord to be rated at 30s. per acre, and land in another part of the union, equally as good in all respects, is rated at 20s. because the game is preserved upon it, ought not the landlord to pay the difference? or ought not both farms to be rated the same, leaving it between the landlord and tenant to settle it as best they can? for surely one portion of the union ought not to be charged more than another. If the landlord is willing to take a less rent, he has his pleasure for his money, and others ought not to be called upon to contribute to that pleasure, particularly as his little hobby is a very great cause of the increase of the rates collected as *poor rates*.

I am your obedient servant,

A TENANT FARMER

(Who has given us his name).

Dec. 6.

PAROCHIAL ASSESSMENT CLUB.

A special meeting of the Midland Farmers' Club was held on Thursday, at Birmingham, when Mr. R. H. Masfen presided. A short discussion took place in reference to the Commons' Committee sitting as a Commission of Inquiry into the operation of the malt-tax, and Mr. May was appointed to represent the Club before the Committee. Mr. Startin then read a paper on "The Law of Parochial Assessment as applied to Agriculture." Mr. Startin called the attention of ratepayers to the fact that the laws were becoming every year more oppressive on the owners and occupiers of property. He traced the history of the poor-laws, and showed the gradual progress that had been made from a voluntary rate to a compulsory one. The Union Chargeability Bill of 1865 was a wise and statesman-like act, because it increased the area of the assessments from parishes to unions. But unless this measure were carried out to its logical results they had confiscated the hard earnings of the resident tenantry, and caused a most unwarranted interference with the rights of property. Political economy taught them that the improvident could have no abstract right to be relieved by the provident; but it must be considered a settled conviction that in a densely-peopled country like this there must always be a great number of persons who, from a variety of circumstances—sickness, infirmity, and bad habits of life—must be in danger of experiencing the extreme consequences of want, and that our system of compulsory relief was deemed a matter no less of wisdom than of humanity. The speaker then urged that although the maintenance of the poor might be considered a national duty, it was an obligation shared by the holders of every kind of property equally, and the poor-law might be considered a sort of legalised charity, made compulsory to render it more uniform. But he could not conceive upon what sound principle the holders of one species of property alone should be called upon to perform this national and onerous function; neither could he understand why the possessors of income from real property should be compelled to be more charitable than the community at large. The aggregate incomes assessed to the

income-tax in the year ending March 31, 1865, was £326,367,979, and in the same year the gross estimated rental of property on which the poor-rates were assessed was only £110,079,308, showing that the poor-rate was a charge on only about 33 per cent. of the aggregate amount of the incomes over £100 per annum; or, to put it plainly, £2 in every £3 escaped the poor-rate altogether. But it was estimated that the aggregate incomes below £100 per year amounted in round numbers to £418,000,000. Apportioning England's amount from this, they found that the total incomes in England and Wales amounted to £640,000,000. Thus they got to the startling fact that only about 18 per cent. of the incomes were charged to the poor-rate, and that £4 out of every £5 escaped the poor-rate altogether. The average rate levied throughout the kingdom in 1865-6 was 2s. 0½d. in the pound. If every inhabitant contributed according to his ability, 4d. in the pound would have been sufficient to raise the funds that had been raised. Mr. Startin proceeded to urge that every discriminating tax—and the poor-rate was a discriminating tax—was a bad tax, and had a deterrent influence upon agriculture. Referring to the many propositions to use the machinery of the poor-rate for purposes foreign, as he alleged to it, he alluded to the idea of education-rates. At present what the state gave came out of the whole income of the country; that was, the burthen fell on an area of £550,000,000. Introduce a school-rate and they threw the burden upon an area of £86,077,600. He hoped the owners of rateable property would not consent to bear any additions to their already numerous national burdens, but would insist that it should be made national, and should be shared by all classes alike. Mr. Startin condemned the classification in workhouses, advocating different abodes for different classes of paupers, and the children in district schools away from the workhouses, provided by the State. There was, in his opinion, but one remedy for the anomalies and abuses of the present system. Parliament had abolished the parish: he said, abolish the union; and let the charge for the poor be a charge upon the Consolidated Fund.

ABINGDON CATTLE AND ROOT SHOW.

This show, after one year's cessation in consequence of the cattle-plague, was revived on Monday, Nov. 25, when there was a very creditable display.

JUDGES.—Corn, Mr. J. Prowse, Wallingford, and Mr. J. Weaving, Oxford. **Roots**, Mr. E. Pullen, Sutton; Mr. T. N. Dewe, Drayton; and Mr. E. L. Williams, Shippon. **Beasts**, Mr. Albert Edmunds, Longworth Lodge; Mr. R. Newton, Campsfield; and Mr. W. Franklin, Ascot.

The following is a list of the prizes:—

BEASTS.

Best Fat Ox, £5, Colonel Loyd Lindsay, M.P. (Hereford); second best, £3, ditto (Devon). Highly commended, Mr. W. Aldworth, Frilford; commended, Mr. H. Betteridge, Hanney, Wantage.

Best Fat Cow, £5, Mr. H. Betteridge (Hereford).

Best Fat Heifer, under four years of age, £5, Mr. H. Betteridge; for the second best ditto, £3, Mr. W. Aldworth.

Best two Heifers, in-calf, under three-years of age, £3, Colonel Loyd Lindsay; second best, £2 ditto.

A Silver Cup, of the value of £5 5s., the gift of Wm. Ballard, Esq., for the best Ox, Colonel Loyd Lindsay, M.P.

A Silver Cup, of the value of £5 5s., the gift of Lord Overstone, for the best Cow or Heifer, Mr. H. Betteridge.

A Silver Cup, of the value of £5 5s., the gift of J. B. Jenkins, Esq., for the best two heifers, Colonel Loyd Lindsay.

SHEEP.

Best pen of three Fat Half-bred Wether Sheep, under 22 months old, £3, Mr. S. Druce, Eynsham; second best, £2 to the Executors of the late Mr. W. Button, Botley.

Best pen of three Fat Short-woolled Wether Sheep, under 22 months old, £3, Colonel Loyd Lindsay; second best, £2 ditto.

Best pen of three Fat Ewes, £3, Colonel Loyd Lindsay.

A Silver Cup, of the value £5 5s., the gift of C. P. Duffield, Esq., for the best pen of Sheep shown in any class, Colonel Loyd Lindsay.

PIGS.

Best pen of three Fat Pigs, of one litter, under nine months old, £2, Mr. B. Aldworth, Hagbourne.

Best Fat Hog, irrespective of weight, age, or breed, £2, Mr. B. Aldworth.

A Cup, value £5, given by Colonel the Hon. C. H. Lindsay, Mr. B. Aldworth.

HORSES.

£10 10s., the gift of Colonel R. Loyd Lindsay, for the best four-year-old hunter, Mr. J. Hitchman, Little Milton, Oxon.

£5 5s., the gift of J. B. Starkie, Esq., for the best cart-colt under three years old, Mr. Joseph Fisher, East Hanney.

ROOTS.

Best 25 untrimmed roots of Swedish Turnips, grown on a piece of not less than five acres, Mr. W. Graham, Abingdon; second best, £1, Mr. T. Latham, Long Wittenham (Sutton's Champion Swede).

Best 25 untrimmed roots of Mangold-wurtzel, grown on a piece of not less than two acres, £2, Mr. James Head, Harwell; second best, £1, Colonel Loyd Lindsay.

Best Collection of Roots, not less than 10 each, field-culture, not less than four sorts, £2, Colonel Loyd Lindsay.

A sweepstakes of £1, for the best four acres of Mangold-wurtzel, and a Piece of Plate, value £3 3s., given by Mr. W. Isaacs, of Reading, for the winner, Colonel Loyd Lindsay.

Premiums given by Messrs. Sutton and Sons, of Reading.

Best 12 roots of Globe Mangold-wurtzel, 10s. 6d., best 12 roots of Long Mangold-wurtzel, 10s. 6d., and best 12 roots of Swedes, 10s. 6d., Colonel Loyd Lindsay; and best 12 roots of Turnips, 10s. 6d., Mr. T. Latham.

THE BIRMINGHAM AND MIDLAND COUNTIES CATTLE SHOW.

If uncertainty impede energy, then must the cattle-plague, which has been hanging so long like a drawn sword by a single thread over the head of the breeder and feeder, be responsible for the very moderate exhibition now being held in Birmingham. Living for some time past in continued fear of a visitation, people have naturally hesitated to incur an expenditure that might only serve to entail a more serious loss, and there were consequently many beasts in Bingley Hall by no means up to the average of show-form. They looked, and most probably had been, hurried in their preparation; while the quality, again, was anything but extraordinary. Neither were the sheep, that of late have offered so bold a front, to be recorded as generally good; and although there was a fair, but, as it seemed, a short entry of pigs, we have seen far better at these same Midland meetings. The poultry section was, in fact, the only one where any satisfactory progress, either in the way of mere numbers or actual excellence, was observable; for the roots were not near so fine as had been anticipated, and the implement department, for which there is in truth no room, still occupies a very subordinate place in the proceedings.

Not but that many well-known men were represented in the Hall. In the opening classes, for instance, of Hereford cattle one came across such familiar names as Aldworth of Frilford, Henry Higgins of Woolaston, Jones of Springfield, Pike of Mitton, Pitt of Chadnor, Turner of The Leon, Walker of Westfield, Bettridge of East Hannay, Richard Hill, Beach, Ververs, Baldwin, and Arkwright, further emphasized as the reading of the catalogue was by the countenance of her Majesty, who for the first time made the entries in her own name. The two lots of Hereford steers, however, were woefully indifferent, and it was the very common opinion that better beasts might have often been picked out of a fair. Nevertheless, the judges tacked on a couple of commendations to the three prizes at their disposal in the older class, where Mr. Pike won with a plain thick cloddy animal, Mr. Jones took second with a high narrow steer, and Mr. Turner third with an ox of better quality, backed by a capital coat. The first of the younger steers had also some recommendation in this way, as indeed he was by far the best of the lot, the second being short of hair and a hard harsh sandler, and Mr. Hill's claret-coloured third a very middling prize animal. The cows and heifers were by comparison very superior, as here all the chief honours centred, Mr. Bettridge's three-years-and-a-half-old heifer being not only the best of her class and breed, but also the best of all the cows and heifers. Up to a point she is certainly wonderfully good, having with breed and style great weight, breadth, and depth. Her back is something marvellous of itself; but alas! as a set-off, she finishes fearfully over her quarter, being here so gaudy and patchy as to amount to positive disfigurement, and for this very reason we question her right to the medal as the best of her sex. Mr. Arkwright's second to her was a very nice one on a smaller scale, and Her Majesty took the third prize and a commendation for a couple of tolerably good heifers, though not equal to the stand we had been led to imagine the Royal Herefords would make when we were at the Windsor sale a month or so since. Very possibly the steers may make more mark in London. It is somewhat noticeable that none of the first-prize Herefords in Bingley Hall this year were bred by the exhibitors. Mr.

Pike's steer was from the late Mr. Monkhouse's herd, Mr. Cocks' from that of late Mr. Edwards of Bawcott, Mr. Bettridge's heifer was bred by Mr. Tanner, of Bromfield, and Mr. Bettridge's cow by Mr. Griffiths' of Brierley. This was a fine handsome animal, and there were some still more famous in competition. Mr. Baldwin's very smart, stylish second comes from Monnaught, while she looks so fresh and blooming at seven years old and with six calves to her credit, that one is inclined to regret the sacrifice. Then, again, Mr. Wigmore is commended for another seven-year-old with four calves as her produce, but she has not worn so well, and is patchy in her flesh and bare in her coat. Mr. Corbet Groves has consequently the third prize with a very comely cow, and Mr. Plimley is commended for one bred at Westonbury by the late Mr. Thomas Rea, that has such fine length and good looks as to have warranted a higher compliment, if not quite up to the condition of a butcher's beast.

But Messrs. Bright, Keary, and Sanday did their judging altogether more after the manner of butchers than breeders, of men more with an eye to mere flesh than to any beauty of outline, truth of type, or perfection of form. The way in which the trio and their companion stewards fiddled about with the tape, measuring almost every animal they had out, should have been enough to perplex the most correct eye; although not content with this, they absolutely girthed the same animals over again when they were brought out for the special premiums! Until one became forcibly reminded of the refrain to Blomfield's visit to Ranelagh:

*"We sigh midst the right and the wrong;
And then—we go round them again!"*

Their line became the yet more palpably demonstrated amongst the Shorthorns, where they fixed on, as not only the best of his class, but as the best of the breed—as indeed they seemed to have some grave doubts as to whether he was not the best beast in the yard—Mr. Heath's steer, bred by Mr. Wythes, of Ravensden. This animal has great size with good flesh in places, set off by far more faults than beauties. He is generally vulgar in his appearance, has a plain, very plain cowy head, and straggling horn, and is as indifferently finished off at the other end, with his tail stuck on high and ungainly, while he stands very weak, bad behind, and is altogether as up-and-down an ox as ever was kept out. But his weight pulled him through, for there was very little difference in his girth and that of Mr. Rowland Wood's second, a much more slightly white steer, which took the first prize of his class and the extra prize as the best ox at Oakham, on the Thursday previous. This is a really handsome level beast; but, having been out all the week, he looked rather lathy and weary, as he will show no better in London after another week of public life. Mr. Coleman's third prize, amongst other good points, is mainly remarkable for his beautiful head; but Mr. Pulver's beast began badly, with quite a long-horn, and he could no longer run up to the white, to which he was second at Oakham. The commendation here went to another of Mr. Heath's and another of Mr. Wythes' breeding; while in a short class of older steers the point of preference was rather a close one. Mr. Taylor, who, like Mr. Rowland Wood, has brought out a wonderful Shorthorn at Birmingham before now, again got very forward with the best of his age and the best of his breed, bred and fed by the exhibitor. But for being bare

behind the shoulder, this red steer is wonderfully true and complete for his age, although he lacks the style and fashion of Mr. Foljambe's good-coloured thick-coated beast, whose symmetry, however, is not so excellent, the roan being very bad about his shoulder points, nor has he fed so level as the other. Amongst the annual victims in the cow class Mr. Stratton sent a sweet lady-like five-year-old that has done very well in the stall, and which should surely have taken second prize instead of third, the one preferred to her being a plain apparently under-bred animal, but of twice the other's age, and with six calves instead of one as her produce in the herd; and on this showing only could such an award have been recorded. There was no mistake, however, over the best Shorthorn cow, bred and fed by the Duke of Sutherland, a long, low, deep one, of very nice appearance, with famous quarters, and beautifully let down behind, but rather out in her shoulders, though at all points a very taking animal, and that for general character might have fairly stood in as the best Shorthorn against such an opponent as Mr. Heath's ox, or as the best female against Mr. Berridge's heifer. Lord Aylesford was highly commended for nothing very particular, and the other commendations included a gandy plain cow of Mr. Pike's, and another poor thing from Broadmoor; a cow of Mr. Masters', with a deal of good about her, being unnoticed; and a wretched beast, sent by Mr. Mitchell, being more charitably passed over. It is satisfactory to find that the present Lord Feversham is going on with his father's herd, which ranked as first amongst the heifers, with a short thick cloggy one, "a vast" more like beef than anything else. The second had some good looks, with nice round barrel, but was hard rather than firm in her touch, and Mr. Aldworth's entry was worthy of her commendation. Taken as a lot, the Shorthorns were not an average show. They carried away none of the great honours, although in moderate company, at the same time that we question whether the Judges did the best by them, such as they were.

For years past the Devons have been so continually dwindling down in Bingley Hall, that it surely would be advisable to dispense with the services of the Devon judge, and put on one say, more cognizant of the Scotch classes, which now invariably get to the front here. There was one animal exhibited in the first class of Devon Steers, bred by Mr. Quartley, of Champson, and exhibited by Mr. Smith, of Exeter, and he took the prize. In the next class Mr. Smith won again with a very clever, deep steer of his own breeding, Mr. Harry Frampton getting second for a very stylish one, and commended for a lathy but highly-bred beast. The second-best cow also came from the Bradford Peverell herd, the first place as usual being occupied by one of Mr. Farthing's thick, useful sort; while two heifers ranked for two prizes, with the Somerset put first and the North Devon second.

Of the four entries of Long-horn Steers, two took prizes, and another was highly commended. Of the seven entries of Long-horn Cows, three received some notice from the Judges; but we had but a hasty glance over them, and must decline to take their now peculiar points upon hearsay. The Scotch breeds were in no numerical strength, for of both Polled and Highlanders there were, in all, but nine exhibited. But the best animal in the show was amongst them, another of Mr. McCombie's black Polled, who scored up a gradually-increasing accumulation of prizes, until Mr. Wright himself could scarcely reckon them. He is very good to meet, has great depth, and a fine firm touch; but he has little or no grandeur in his appearance, no force of outline, and is more commendable as a great heap of good flesh than as a telling specimen of his breed. In his class he had only one solitary opponent; and there were only

four West Highlanders, but they were all clever, as, in fact, one cannot but take to a Highlander so long as his native characteristics are in any way preserved. The Crosses were altogether moderate, the two highly-commended steers positively indifferent; and, taking our line from Birmingham, we are inclined to think that the preliminary flourish of trumpets issued on the very quasi authority of the Smithfield Club will scarcely be warranted when the time comes.

There was scarcely a breed of sheep but that has been better represented in Bingley Hall. Mr. Foljambe did not make any entries of Leicesters, and Lord Berners' dainty weakly pen succeeded to the first place, as the other two prizes awarded to the only other two lots in competition might have reasonably been withheld. The other Longwools or Cotswolds were almost equally indifferent, for the best pen was very middling; the third prize of Lincolns had some size, and Messrs. West's entry, although not sorry, more appearance than any of the others. In the Southdowns, again, the opposition to Lord Walsingham was very poor, both Lord Sondes and Lord Radnor having, by these presents at least, trained off. The Coleshill shearlings were really bad, and the older sheep sadly lacking style and smartness. Whereas Lord Walsingham's shearlings were the neatest, or rather perhaps the handsomest his lordship has ever sent to Birmingham, so full of symmetry and breeding, and so wonderfully well got up; but then there was an own brother to the best Bury shearling in the first prize pen, and Mr. Woods and John Day must divide the credit between them. The best older sheep were not so well matched, one having a very bad head, but the Merton flock is manifestly in force; while on the other hand Mr. Overman is going back, and even his renowned cross is losing its leg of mutton, and an immaterial commendation was his only reward. So far as the sheep judges were concerned, nothing could work better than the new arrangement, by which some new men were put on—Mr. Fookes for the Southdowns, Mr. Mansell for the Shropshires, and Mr. Spencer for the Leicesters. Even the Shropshires awards were received with kind complacency, and that is saying something, too. In the opening class, however, the two short-wool judges divided, Mr. Fookes going for the quality of Mr. Beach's pen and Mr. Mansell for the better hand on Mr. Mathews' sheep, which were eventually pronounced the superior, as Mr. Fookes subsequently admitted. But, as last year, the best of all the Shropshires were Mr. Nock's sheep, that strike you at once for their uniform good looks, size, use, and constitution. Mr. Pece himself might pile up the superlative over them, and Mr. Matthews, with another good lot, and Mr. Henry Smith could afford to succumb in such company. Mr. Beech's old single wether was very good, square, and true, and in the pens of old sheep Lord Wenlock, with his Wenlock flock, had the credit to beat two lots from Sutton Maddock, the one pen of which took the second prize and the other a commendation, so that the victory was by no means a walk-over. The Oxfordshire Downs were perhaps more in the advancement than any other breed of sheep in the show. The Duke of Marlborough's good pen was only highly commended, and Mr. Samuel Druce's not noticed; but then the Eynsham wethers were wretchedly got up, as if the main object were to make their necks look as long and weak as possible. The two winning lots were remarkable for one capital sheep in each, Mr. Stilgoe, indeed, having one very good, one very fair, and one very bad; and Mr. Alfred Rogers one quite good enough to send up to London on his own account. As we have already said, Mr. John Overman could not hold his own with the crosses, where the Oxfordshire were again in front, with the Lincolns showing, as they frequently do, to more advantage in the single ewe class, while the Shropshire ewes ran up to a very short entry, with

Mr. Coxon's flock at the head of it. Although but a bad place for the sale of stock, Lord Walsingham's, and many more of the sheep exhibited, will be sold in Birmingham.

In the exercise, as we take it, of some very good taste, as well as in justice to themselves, the Messrs. Howard again sent their young breeding pigs to Birmingham; and with three entries of five in each pen, they took the first, second, and third prizes! The most remarkable feature in the case, however, is that of some of these pigs of the same litter show precisely the same discrepancies as to dentition for which their elder brethren were thrown out last year; and if the rejection were then justified, so at least, for the sake of a principle, should it be insisted upon now, or what is the principle worth? Still, although Messrs. Howard have now escaped, the list of the black-balled included Mr. Stearn, Mr. Beach, Mr. Mangles (over and over again), Mr. Mitchell, and Mr. Bantock. The Bedford fat pigs of three in pen also took the first and third prizes of their class, being divided by Her Majesty's Windsor whites, and almost all the other entries disqualified by the veterinary inspector. This Bedford pig, a lengthy good collared animal, is, we believe, a cross between Wainman and Duckering, whereby, preserving much of the size, something of the coarseness of the Yorkshire whites is got rid of, although the cross is occasionally short of coat. They quite over-powered the smart Royals, which had also to give way in another class to Mr. Cartwright, Mr. Lynn, and Mr. Stearn, but the competition in both these cases was very limited. There was a far larger entry of single fat pigs, where Mr. Lynn was first with a capital, deep, curly-coated white, the Berkshires reaching to second and third, and some other whites coming in for commendations. Amongst the breeding Berkshires Mr. Smith, of Henley-in-Arden, maintained the lead he has so long held here, with his pretty fine-quality sort, that surely, though, is getting away from the useful rough-and-ready customer a true Berkshire pig should be. Mr. King Tombs' long pigs look more like this, and Mr. Humfrey's more so still, although they do not find as much favour in the show-yard. Still, quality always will tell in public, and although the judges were new to their places, after the long innings of Messrs. Moon and Spearling, they quite justified by their doings the opinion of the full Council, that it is as well now and then to have a little fresh blood.

With the Hall admirably arranged, the game-fowl were on view during the day, as well as the ducks, in the small chamber, to be converted on Monday into an auction-room. But the placing of the poultry was a sealed book when we left on Saturday afternoon, and had it been otherwise we would have needed the eyes of Argus, the hands of Briareus, and the ubiquity of the Irish bird, a prize one no doubt, to cope with Dorkings that reach to a hundred entries in a single class, and to classes of infinite varieties—with Cochins, of divers colours and curious feathers; with Bramahs, light and dark; with Crève-cœur, Houdans, La Flèche, and other familiar breeds; with Spanish, Hamburgs, Polish, and the glorious Game, with their varmint blood-like heads, bright eyes, and handsome crests; and with bantams and pigeons, which bother even the brains of Messrs. Harrison Weir and Tegetmeier, who paint them, and write about them, and dream about them, and talk about them, until the smoking-room of "The Queen's" becomes as fluffy as Doncaster is horsey on the night before the Leger.

The cups were awarded as follows: Dorking coloured (except silver-grey), best cock, hatched, 1867, Mr. John Fox, St. Bees, Cumberland; Cochins (cinnamon and buff), best cock, hatched in 1867, W. A. Taylor, Manchester; Amateur sweepstakes of 21s. each for the best Cochins-China cock (brown or partridge feathered), hatched in 1867, Edward Tudman, Whitechurch,

Salop; Rev. F. Taylor's prize of £3 for the best white Cochin cock, of any age, Richard Smalley, Lancaster; Cup, Bramah-Pootra fowls (dark), best cock, hatched in 1867, Mrs. Hurt, Alderwasley, Derby; Bramah-Pootra (light), best cock, of any age, H. Dowsett, Pleahy, Chelmsford; best pair of hens or pullets, Mr. Frederick Crook, Forest Hill, London; best cock bird in Crève-cœur, Houdans, or La Flèche, Colonel Stuart-Wortley (crève-cœur); best pair of hens or pullets in same classes, Col. Stuart-Wortley, Grove End Road, London; (Houdans); for best Spanish cock, hatched in 1867, Miss Biggar, Ecclefechan, Dumfriesshire; best silver-spangled Hamburg cock of any age, Henry Beldon, Bingley, Yorkshire; best game cock, hatched in 1867 (black-breasted red), Rev. L. R. Jacob, Llanfair, Welshpool.

The weights of some of the entries which may be properly termed farm poultry were as follows: Turkeys, cock and hen, exceeding one year old, 1st, 2nd, 3rd, and 4th prizes respectively, 50lbs., 46½lbs., 42½lbs., and 42½lbs.; birds of 1867, 1st prize 36lbs. 13oz., 2nd 35lbs., 3rd 35lbs., and 4th 33½lbs. Geese, white gander and goose, exceeding one year old, 1st prize 54½lbs., 2nd 49lbs.; birds of 1867, 1st prize 44lbs., 2nd 41lbs.; grey and mottled, exceeding one year old, 1st prize 54lbs., 2nd 41lbs.; birds of 1867, 1st prize 45½lbs., 2nd 45½lbs. Ducks, white Aylesbury (drake and duck), 1st prize 18½lbs., 2nd 17½lbs., 3rd 16½lbs.; Rouen, 1st prize 19½lbs., 2nd 18lbs., 3rd 18lbs., 4th 16lbs., 5th 17½lbs., 6th 15½lbs.

The display of roots is much below what it has been on former occasions, both as to the number and general merit of the specimens. This, in a great measure, is attributable to the ungenial character of the early part of the season, and to the fact of several well-known exhibitors in this department being absent. The weights, both of mangolds, swedes, and turnips, were so manifestly below the ordinary weights that the judge did not submit a single specimen to the arbitration of the scales. The display of cabbage is about of average merit; Mr. Robinson, of Melbourne, Derbyshire, who has before taken honours in the same class, standing first and second, with six specimens each of his "champion," weighing 387lbs., and 355lbs. respectively. His success on former years has, perhaps, had the effect of frightening other competitors from the field. There was nothing remarkable in the potatoes, except that—perhaps from selection of the tubers planted—there is a tendency observable in some of the round varieties to assume the kidney form, and the kidneys the round form. The display of barley is fair, but nothing more; while the white wheats are superior, and the peas and beans remarkably good.

PRIZE LIST.

CATTLE.

JUDGES.—Mr. George Bright, Broom, Aston-on-Clun, Salop.
Mr. H. W. Keary, Bridgnorth.
Mr. William Sanday, Holme Pierrepont, Nottingham.

HEREFORDS.

OXEN OR STEERS.—First prize £15, Aaron Pike, Mitton, near Tewkesbury, Gloucestershire; second, £10, John Edwin Jones, Springfield, Breinton, near Hereford; third, £5, Philip Turner, The Leen, Pembridge, Herefordshire. Commended: Colonel Robert Loyd Lindsay, M.P., Lockinge, Wantage, Berkshire; Henry Bettridge, East Hanney, Wantage, Berkshire.

STEERS.—First prize £15, Benjamin Cocks, Tugford, Church Stretton; second, £10, Joseph Beach, The Hattons, Brewood, and Dudley; third, £5, Richard Hill, Orleton Court, Ludlow, Herefordshire.

COWS.—First prize £15, Henry Bettridge, East Hanney, Wantage; second, £10, John Baldwin, Luddington, Stratford-upon-Avon; third, £5, Robert Vincent Corbet Groves, Berrington, Salop. Commended: John Wigmore, Bickerton Court, Much Marcle, Herefordshire; Samuel Plimley, Albury, Salop.

HEIFERS.—First prize, £15, Gold Medal for best cow or heifer of any breed or age, and extra prize of £25 as best

Hertford, Henry Bettridge, East Hauney, Wantage, Berks., second, £10, John Hungerford Arkwright, Hampton Court, near Loominster, Herefordshire; third, £5, Her Majesty the Queen, Windsor Castle. Commended: Her Majesty the Queen; Joseph Crane, Calcot, Shrewsbury.

SHORTHORNS.

Oxen or Steers.—First prize, £15, extra prize of £25 as the best Shorthorn, William Heath, Ludham Hall, Norwich; second, £10, Rowland Wood, Clapton, near Thrapston, Northamptonshire; third, £5, John Coleman, Runhall, near Wymondham, Norfolk. Commended: William Heath, Ludham Hall, Norwich; Thomas Pulver, Broughton, Northamptonshire.

Steers.—First prize, £15, silver medal as breeder and Earl of Aylesford's prize of £15 as the best Shorthorn bred and fed by the exhibitor, George Taylor, Sewerby Cottage, Bridlington Quay; second, £10, G. S. Foljamba, Osberton Hall, Worksop, Notts; third, £5, Sir William de Capell Brooke, Bart., Goddington Grange, Kettering. Commended: Earl of Radnor, Coleshill, Highworth, Wiltshire.

Cows.—First prize, £15, and silver medal as breeder, the Duke of Sutherland, Lilliehurst, Newport, Salop; second, £10, Richard Taylor, Hazeleigh Hall, Maldon, Essex; third, £5, Richard Stratton, Walls Court, Stapleton, Bristol; highly commended, the Earl of Aylesford, Packington Hall, Coventry. Commended, Aaron Pike, Mitten, near Tewkesbury; Thos. Garne and Son, Broadmoor, Northleach, Gloucestershire; Adam Dugdale, Rose Hill, Burnley, Lancashire.

Heifers.—First prize, £15, and silver medal as breeder, Lord Feversham, Duncombe Park, Halmaley, York; second, £10, Graddon and John Perry, Acton Pigott, Salop; third, £5, William Tidy, Middleton, Tamworth. Commended, Henry Greenway, Hambrook, near Bristol; William Aldworth, Fritford, near Abingdon, Berks.

DEVONS.

Oxen or Steers.—First prize, £15, William Smith, Higher Hoopers, Exeter, Devon. (No competition.)

Steers.—First prize, £15, and silver medal as breeder, and extra prize of £25 for the best Devon, William Smith, Higher Hoopers; second, £10, Harry Frampton, Blandford, Dorsetshire. Commended, Harry Frampton, William Smith, Higher Hoopers.

Cows.—First prize, £15, Walter Farthing, Stowey Court, Bridgewater, Somerset; second, £10, Edward Parfitt, Palace Farm, Wells, Somerset. Commended, William Smith, Higher Hoopers.

Heifers.—First prize, £15, Richard Burton, Place Barton, Broadclyst, Devon; second, £10, William Smith, Higher Hoopers.

LONG HORNS.

Oxen or Steers.—First prize, £10, and silver medal as breeder, Sir John Harpur Crowe, Bart., Calke Abbey, Derbyshire; second, £5, W. T. Cox, M.P., Spondon Hall, near Derby. Commended, J. H. Burbary, The Chase, Kenilworth.

Cows or Heifers.—First prize, £10, and silver medal as breeder, W. T. Cox, M.P., Spondon Hall; second, £5, John Jackson Burbary, The Crofts, Stratford-on-Avon. Commended, Thos. Satchwell, Hernfield, Knowle.

SCOTCH BREEDS.

Polled Oxen and Steers.—First prize, £15, silver medal as breeder, extra £25 as the best Scott, Mr. C. Hatcliff's prize of 10 guineas for best Scott, gold medal as the best ox or steer of any breed or age, hotel and innkeepers' prize of 30 guineas as the best animal in the cattle classes, and the President's prize of 35 guineas for the best ox or steer of any breed or age, bred and fed by exhibitor, William McCombie, Tillyfour, Aberdeen, N. B.; second, £10, Andrew Longmore, Linkfield, Rattie, Banffshire.

West Highland Oxen or Steers.—First prize, £15, and silver medal as breeder, Duke of Sutherland, Dnnrobin Mains, near Golspie, N. B.; second, £10, Richard Coston, Hayton, Staunton Leary, Salop; third, £5, Thomas Lealie, Melville Cartwright, Melville House, Fife, and Newbottle, Northamptonshire.

Scotch Cows or Heifers.—First prize, £10, James Reid, Graystone, Alford, Aberdeenshire; second, £5, William Spencer, Potters Marston, Hinckley. Commended, Duke of Buccleuch and Queensberry, Tibbers, Thornhill, Dumfriesshire; Duke of Buccleuch.

WELSH BREEDS.

[No entries.]

NORFOLK AND SUFFOLK POLLED BREEDS.

[No entries.]

OTHER PURE BREEDS AND CROSS-BRED ANIMALS.

Fat Oxen or Steers.—First prize, £10, Colonel Robert Loyd Lindsay, M.P., Lockinge Park, Wantage, Berks; second, £5, Richard Hawkes, Hunscombe, Charlccote, Warwickshire. Highly commended, Joseph Beach, The Hattons, Brewood and Flour Mills, Dudley; Richard Burton, Place Barton, Broadclyst, near Exeter.

Fat Cows.—No entry.

Fat Heifers.—First prize, £10, Silver Medal as breeder, William Tidy, Middleton, Tamworth; second, £5, William Henry Marbrow, Newton Solney, Barton-upon-Trent.

EXTRA CLASSES.

For animals not qualified to compete in any of the preceding classes.

Oxen or Steers.—No merit.

Cows or Heifers.—Prize £5, Marquis of Anglesea, Beauchamp, Rugeley, Staffordshire.

SHEEP.

Judges.—Mr. H. Fookes, Whitechurch, Blandford, Dorset. Mr. Thomas Mansell, Ercall Park, Wellington, Salop.

Mr. F. Spencer, Claybrook, Lutterworth.

LEICESTERS.

Three fat wethers not exceeding 22 months old. First prize, £15 and silver medal as breeder. Extra prize of 10 guineas given by W. D. Bromley, Esq., M.P., for the best pen of Long-woolled sheep, Lord Berners, Keythorpe Hall, Leicester; second, £10, William Perry Herrick, Beaumanor Park, Leicestershire; third, £5, William Perry Herrick.

LONG-WOOLLED SHEEP NOT BEING LEICESTERS.

Three fat wethers not exceeding 22 months old. First prize, £15 and silver medal as breeder, William Henry Hitchcock, Miserden Park, near Cirencester, Gloucestershire; second, £10, William Donne, Monkton, Bridgend, Glamorganshire; third, £5, John Pears, Mere, Bransford, Lincoln. Commended: Thomas and George West, Greenhill Farm, Bletchington, Oxon.

SOUTH AND OTHER DOWN SHEEP.

Three fat wethers, not exceeding 22 months old.—First prize, £15 and silver medal as breeder, and extra prize of £20 given by the linen and woollen drapers of Birmingham for the best pen of three fat wethers, Lord Walsingham, Merton Hall, Thetford, Norfolk; second, £10, Lord Walsingham; third, £5, Lord Sondes, Elmham Hall, Thetford, Norfolk. Commended: Lord Sondes.

Three fat wethers, exceeding 22, but not exceeding 34 months old.—First prize, £10 and silver medal as breeder, Lord Walsingham, Merton Hall; second, £5, Earl of Radnor, Colcahill, Highworth.

SHROPSHIRE SHEEP.

Five fat wethers, not exceeding 22 months old.—Prize of 20 guineas, given by the Mayor of Birmingham (Thos. Avery, Esq.), and silver medal as breeder, Henry Matthews, Montford, Shrewsbury. Highly commended: Joseph Beach, The Hattons, Brewood, and Flour Mills, Dudley.

Three Fat Wethers, not exceeding 22 months old.—First prize, £15, and Silver Medal as breeder; extra prize of 10 gs., given by G. C. N. Newdegate, Esq., M.P., for best pen of Shropshire Sheep; and £10 given by the Linen and Woollen Drapers of Birmingham for the second-best pen of three fat Wethers, Thomas Nock, Sutton House, Shifnal; second, £10, Henry Matthews, Montford, Shrewsbury; third, £5, William Yates, Grindle House, Shifnal. Commended: Joseph Beach, The Hattons.

Three Fat Wethers, exceeding 22 but not exceeding 34 months old.—First prize, £10, and Silver Medal as breeder, Lord Wenlock, Monk Hall, Much Wenlock; second, £5, Henry Smith, Sutton Maddock, Shifnal. Commended: Henry Smith.

Single Shropshire Wether.—Silver Cup, value 5 gs., given by Messrs. Mapplebeck and Lowe of Birmingham for best Shropshire Wether of any age, and Silver Medal as breeder,

Joseph Beach, The Hattons, Brewood. Commended: Lord Wenlock, Monk Hall, Much Wenlock; Earl of Aylesford, Packington Hall, Coventry.

OXFORDSHIRE DOWNS.

Three Fat Wethers, not exceeding 22 months old.—First prize, £10, and Silver Medal as breeder, Zachariah W. Stilgoe, Adderbury Grounds, Banbury, Oxfordshire; second, £5, Alfred Rogers, Bromham, near Bedford. Highly commended, Duke of Marlborough, Blenheim Palace, Woodstock, Oxon. Commended, Nathaniel Stilgoe, Adderbury Manor Farm, Banbury, Oxfordshire.

SHEEP NOT QUALIFIED TO COMPETE IN ANY OTHER CLASS.

Three Fat Wethers, of any Age.—First prize, £10, and Silver Medal to breeder, Thomas Gunnell, Milton, Cambridgeshire; second, £5, Edward Froud, Bonhey, Exminster, Devon.

CROSS BRED SHEEP.

Three Fat Wethers, not exceeding 22 months old.—First prize, £10, and Silver Medal as breeder, J. K. Shrimpton, Easington Farm, Chilton, Bucks; second, £5, Nathaniel Stilgoe, Adderbury Manor Farm, Banbury. Highly commended, John Overman, Burnham Sutton, Burnham Market, Lynn.

LEICESTER EWES.

Fat ewes of any age, having bred one or more lambs. [Entry not exhibited.]

LINCOLN AND COTSWOLD EWES.

Fat ewes of any age, having bred one or more lambs.—First prize, £5, and silver medal as breeder, John Henry Casswell, Craughton, Folkingham, Lincolnshire; second, £3, Joseph Cradock, Eastington, Northleach. Commended, John King Tombs, Langford, Lechlade, Gloucestershire.

SOUTH AND OTHER DOWN EWES.

Fat ewes of any age, having bred one or more lambs.—First prize, £5, and silver medal as breeder, Duke of Marlborough, Blenheim Palace, Woodstock; second, £3, Lord Walsingham, Merton Hall, Thetford. Highly commended: Duke of Marlborough; Lord Sondes, Elmham Hall, Thetford, Norfolk.

SHROPSHIRE EWES.

Fat ewe of any age having bred one or more lambs.—First prize, £5 and silver medal as breeder, John Coxon, Freeford Farm, Lichfield; second, £3, Bowen and Jones, Emsdon House, Shrewsbury. Highly commended: John Coxon, Freeford Farm.

FAT PIGS.

JUDGES.—Mr. W. H. Clare, Twycross, Atherstone.

Mr. A. F. M. Druce, Burghfield, Reading.

Mr. C. Randall, Chadbury, Evesham.

Three fat pigs, of one litter, not exceeding 10 months old.—First prize, £10, and silver medal as breeder, Thomas Leslie Melville Cartwright, Melville House, Fife and Newbottle, Northamptonshire; second, £5, John Lynn, Church Farm, Stroxtan, Grantham; third, £3, Samuel G. Stearn, Brandeston, Wickham Market, Suffolk. Highly commended: Her Majesty the Queen, Windsor Castle. Disqualified: Thos. Bantock Merridale House, Wolverhampton.

Three fat pigs of one litter, not exceeding 15 months old.—First prize, £10, and silver medal as breeder, and extra prize of £5 5s. for the best pen of fat pigs, James and Frederick Howard, Britannia Farms, Bedford; second, £5, her Majesty the Queen, Windsor Castle; third, £3, James and Frederick Howard. Disqualified: Samuel Geater Stean, Brandeston, Wickham Market, Suffolk; Joseph Beach, the Hattons, Brewood, and Flour Mills, Dudley; Geo. Mangles, Givendale, near Ripon, Yorkshire; George J. Mitchell, Newton Mount, Barton-upon-Trent.

Fat pig, exceeding 15 months old.—First prize, £6, and silver medal as breeder, John Lynn, Church Farm, Stroxtan, Grantham; second, £4, John King Tombs, Langford, Lechlade, Gloucestershire; third, £3, Heber Humfrey, Kingstone Farm, Shrivensham, Berks. Highly commended: Richard Elmthirst, Duckering, Northorpe, Kirton Lindsey, Lincoln; James and Frederick Howard, Britannia Farm, Bedford. Commended: Earl of Radnor; Thos. Crisp, Butley Abbey, Wickham Market. Disqualified: Geo. Mangles, Givendale, near Ripon, Yorkshire; Geo. Mangles; Geo. Mangles.

BREEDING PIGS.

BERKSHIRE BREED.—Five pigs of one litter, exceeding three and not exceeding six months old.—First prize, £10, and silver medal as breeder, and extra prize of £5 5s. for the best pen of pigs of the Berkshire breed, Joseph Smith, Henley-in-Arden; second, £5, John King Tombs, Langford Lechlade, Gloucestershire; third, £3, John King Tombs. Highly commended and silver medal: Joseph Smith, Henley-in-Arden; Heber Humfrey, Kingstone Farm, Shrivensham Farm, Berks. Highly commended: John Spencer, Villiers Hill, Kenilworth. Commended: Abraham Dixon, Birche Green, Erdington, near Birmingham; Heber Humfrey, Kingstone Farm.

PIGS OF OTHER LARGE BREEDS.—Five pigs of one litter, exceeding three and not exceeding six months old.—First prize, £10, and silver medal as breeder, James and Frederick Howard, Britannia Farms, Bedford; second, £5, James and Frederick Howard; third, £3, James and Frederick Howard.

PIGS OF A SMALL BREED.—Five pigs of one litter, exceeding three and not exceeding six months old.—First prize, £10, and silver medal as breeder, and an extra prize of £5 5s. for the best pen of pigs of a small breed, John Lynn, Church Farm, Stroxtan, Grantham; second, £5, and silver medal, Peter Eden, Cross Lane, Salford, Manchester; third, £3, Countess of Aylesford, Packington Hall, Coventry. Highly commended: Robert Berkley, Spetchley Park, near Worcester; Peter Eden, Salford.

CORN.

JUDGES.—Mr. Ewd. Davenport, Erdington.

Mr. J. Mathews, Edgbaston House, Birmingham.

WHITE WHEAT.—Samples of one bushel each.—First prize, £2 2s., Robert Loyd Lindsay, M.P., Lockinge Park, Wantage, Berks (Talavera); second, £1 1s., Joseph H. Clark, Altwod, Maidenhead (Chudham).

RED WHEAT.—Samples of one bushel each.—First prize, £2 2s., Thomas Horley, jun., The Fosse, near Leamington (Nursery); second £1 1s., E. Lythall, Radford Hall, Leamington (Nursery). Highly commended: Robert Loyd Lindsay, M.P., Lockinge Park, Wantage, Berks (Nursery).

BARLEY.—Samples of one bushel each. First prize, £2 2s., John C. Adkins, Milcote, Stratford-upon-Avon (Hallett's Pedigree); second, £1 1s., T. Lowe, Trysull, Wolverhampton (Old Shropshire).

OATS.—Samples of one bushel each. First prize, £2 2s., Frederick Lythall, Spittal Farm, Banbury; second, £1 1s., Robert Loyd Lindsay, M.P., Lockinge Park, Wantage, Berks (White Dutch).

BEANS.—Samples of one bushel each.—First prize, £2 2s., Frederick Lythall, Spittal Farm, Banbury; second, £1 1s., Joseph H. Clarke, Altwod House, Maidenhead (White Eyes). Commended, Edmund Lythall, Radford Hall, near Leamington.

PEAS (White).—Samples of one bushel each. First prize, £2 2s., Joseph H. Clark, Altwod House, Maidenhead (Ringwood Marrow); second, £1 1s., Frederick Lythall, Spittal Farm, Banbury (Banbury Prize-takers).

PEAS (Blue).—Samples of one bushel each. First prize, £2 2s., Frederick Lythall, Spittal Farm; second, £1 1s., Edmund Lythall, Radford Hall, near Leamington. Commended, George Dunkley, Kingsthorpe, Northampton.

PEAS (Grey).—Samples of one bushel each. First prize, £2 2s., Frederick Lythall, Spittal Farm. Only one entry.

ROOTS.

JUDGES.—Mr. Edward Davenport, Erdington.

Mr. J. Mathews, Edgbaston House, Birmingham.

A silver cup, or other articles of plate, of the value of ten guineas, given by Messrs. Proctor and Ryland, of Birmingham, for the best collection of the four following varieties, namely:—Long mangold wurzel, globe mangold wurzel, swedes, and carrots, six roots of each to be shown; Sir William Heathcote, Bart., M.P., Hursley Park, Winchester, Hall's long red mangolds, Hall's globe mangolds, Hall's Westbury purple swede, Hall's long Belgian carrots.

COHL RARI (six specimens).—First prize, £2 2s., Col. J. S. North, M.P., Wroxton Abbey, Banbury (green). Second, £1 1s., Col. North, M.P. (green).

LONG MANGOLD WURZEL (six specimens).—First prize, £2 2s., James Webb, Spring Hill, Fladbury, Pershore; second,

41 *ls.*, Samuel Robinson, Shaw House, Melbourne, Derbyshire.

GLOBE MANGOLD WURTZEL (six specimens).—First prize, £2 2s., Samuel Robinson, Shaw House; second, £1 *ls.*, Col. North, M.P.

SWIDES OF ANY VARIETY (six specimens).—First prize, £2 2s., Zachariah W. Stilgoe, Adderbury Grounds, Banbury (Purple Top); second, £1 *ls.*, Col. North, M.P. Commended, Col. North, M.P.; Zachariah W. Stilgoe.

COMMON TURNIPS, WHITE FLESH (six specimens).—First prize, £2 2s., J. H. Clark, Altwood, Maidenhead; second, £1 *ls.*, James Webb, Spring Hill, Fladbury, near Pershore (Grey Stone).

COMMON TURNIPS, YELLOW FLESH (six specimens).—First prize, £2 2s., James Webb, Spring Hill, Fladbury (Dale's Hybrid); second, £1 *ls.*, William McCombie, Tillyfour, Aberdeen, N. B. (Aberdeen Yellow).

CABBAGES OF ANY VARIETY (six specimens).—No merit.

OX CABBAGE (Six specimens).—First prize, £2 2s., S. Robinson, Shaw House, Melbourne, Derbyshire (Robinson's Champion); second, £1 *ls.*, S. Robinson (Robinson's Champion).

KIDNEY POTATOES (Twelve specimens).—First prize, £2 2s., John K. Fowler, Prebendal Farms, Aylesbury (King of the Flakes); second, £1 *ls.*, G. Dunkley, Kingsthorpe, Northampton (seedling). Highly commended, George Dunkley (seedling).

ROUND POTATOES (Twelve specimens).—First prize, £2 2s., John Shackel, Blenheim House, Small Heath, near Birmingham (Red Regents); second, £1 *ls.*, George Mangles, Givendale, Ripon, Yorkshire.

REFERENCE FOR THE AGES OF STOCK.—Professor John Gamgee, Albert Veterinary College, Bayswater, London.

VETERINARY SURGEONS APPOINTED BY THE LOCAL AUTHORITY.—Messrs. Hunt and Parker, Birmingham.

VETERINARY INSPECTOR.—Mr. E. Stanley, Birmingham.

The nineteenth annual general meeting of the subscribers took place on Nov. 28th; the Earl of Powis, the president of the year, in the chair. The Earl of Bradford was elected the president for the ensuing year. The thanks of the meeting were presented to the Earl of Powis for his attention to the interests of the society during the past year. Votes of thanks were passed to the donors of special prizes. A vote of thanks was passed to Mr. Shackel, the honorary treasurer, and he was re-appointed for the ensuing year. The thanks of the meeting were given to the stewards of the various departments, for valuable assistance in the management of the exhibition. A vote of thanks was given to Mr. Mapplebeck, and the other members of the Poultry Committee, for their services in the management of that important department of the show. Mr. Lowe proposed a list of noblemen and gentlemen to form the Council for the ensuing year. The names of Mr. W. D. Bromley, M.P., Mr. G. Dixon, M.P., Mr. J. Arnold, and Mr. J. Cheeshire, were proposed in the room of others, who, during the past year, had not attended to the duties of the office through infirmity or from other reasons. Mr. Luckcock seconded the motion for the adoption of the list. Mr. Horley, feeling, with others, that the agricultural interest in the Midland Counties was not sufficiently represented in the list of Mr. Lowe, proposed another list, in which he introduced the names of Messrs. Clare (Leicestershire), Harris (Worcestershire), J. H. Lees (Warwickshire), and R. H. Madden (Staffordshire). Mr. Osborne seconded the motion, which, however, was lost by a minority of 15. The President suggested to the meeting that the Society should follow the example of the Royal Agricultural Society of England, and establish a class of life subscribers. The system, as they all very well knew, had answered well, not only in the Royal Society, but in nearly all the charitable institutions of the country. He next pointed out an inconvenience which arose from the present non-consecutive arrangement of the poultry pens, and which necessitated a person walking along the rows to make four different references to the catalogue. Mr. Lowe wished to ask their solicitor (Mr. Allcock) whether it would not be necessary to make some alteration in the rules before it could be carried out? Mr. Allcock replied that an altera-

tion in the rules would be necessary. Mr. Horley, referring to the veterinary examination of the pigs, suggested that it was desirable, for the purpose of economising time and trouble, that only the prize animals should be inspected. Mr. Wright contended that if there was to be an examination of the animals at all, it must be a complete one. The system of inspection had been carried out by the Royal Society for some years past, and on the occasion of the last show the stewards had to congratulate themselves that the number of disqualifications were very few. The general desire, too, seemed to be to extend and not to limit the regulation. Mr. Lowe urged that a complete inspection was necessary, for the purpose of preventing unprincipled persons from introducing animals not qualified. The mayor, speaking upon the question of life subscribers, said he thought the suggestion of the noble President was entitled to more consideration than it had received. It was, no doubt, open to the objection that, in one sense, it might be anticipating future revenue; but it was, on the other hand, supported by the experience of other institutions, and he believed it would introduce a considerable number of new subscribers, without in any respect impairing the income of the society. He would, therefore, take the liberty of moving, "That the Council be requested to take into consideration the desirability of instituting a class of life subscribers, and to report to a future meeting." Mr. Caldecott seconded the motion, which was carried unanimously. A vote of thanks was passed to the proprietor of the "Hen and Chickens" for the free use of the room for the meeting. The Mayor proposed a vote of thanks to the Earl of Powis for presiding, which was carried unanimously, and briefly acknowledged.

LORD HARROWBY AND HIS TENANTRY.—At the Sandon and Marston Society's meeting, Mr. Randall, after noticing the beneficial influences of small local societies like that, and remarking on the excellence of the ploughing, said that he would, in accordance with the invitation of Lord Harrowby, offer one or two remarks bearing on their own agricultural interests. He stated that Lord Harrowby, with a view to promote the interests of his tenants on the Sandon estates, had arranged for a new form of agreement, which would give greater liberty to the occupier than the custom of that part of the country previously gave, under which the tenant would be left at as great liberty as was consistent with his own interest in disposing of the produce of his farm in the best way he could to his own advantage. Again, everyone knew that when a tenancy was about to expire tenants had been very much in the habit of taking as much as they possibly could out of the land; and they reconciled that to their consciences by the plea that they found the farm in as bad a state as they were leaving it. It was clear that to secure a farm being left in a good state at the expiration of a tenancy it must be made the interest of the tenant to leave it so. Lord Harrowby, under the new agreement, secured, as far as possible, that a tenant who farmed well to the end of his tenancy should reap the benefit of all unexhausted improvements. That was the only way to secure good farming to the end of a tenancy, which could not be done by stipulations of penalties. He sincerely hoped that the spirit of that agreement would extend far beyond the boundary of the parish of Sandon, or even of the county of Stafford. Another point which Lord Harrowby had considered was the labour question. They, as well as other persons engaged in agriculture, found some difficulty in obtaining a sufficiency of labour; and one way of securing it was to provide additional cottage accommodation. Let the labourers have comfortable cottages, and they would not want respectable tenants. Now, their landlord was willing to help all those who would help themselves; and it was for them to make up their minds to pay such a reasonable rate of interest on the outlay as would justify Lord Harrowby in incurring it. So perishable a class of property could not be a good investment; but if they, as tenants, would intimate to him that they were in want of cottages for labourers, he would communicate their wishes to Lord Harrowby, and he had no doubt that the want might be supplied. He wished, however, to speak to them, not only as the agent of Lord Harrowby, but as a fellow tenant-farmer. He was one of those who, going into a new district, was very reluctant to give an opinion in opposition to the farming practices which prevailed in it, as he took it for granted that the

men of a particular district knew best how practically to deal with their land. Therefore, if he should say anything with which they would not agree, he hoped they would give him credit for not wishing to dictate to them in any way, but simply to make one or two suggestions; and he should not confine his remarks to the Sandon tenants, but they would apply to the farming of the neighbourhood generally. The first thing was as to the adoption of dead fallows on strong land. He gave them great credit for the cultivation of the light soils, which the roots shown that day proved was excellent; but he could not understand why clay lands should lie fallow for a year doing nothing at all; for not only was a crop lost, but he was satisfied that the land would be in a better condition to grow a wheat crop (which he presumed they grew after a fallow) if they grew another crop before it—vetches he should suggest, consumed on the land by sheep. He would commend that suggestion to their serious consideration, for he saw no district east, west, north, or south, in which there was so much dead fallow as he had seen in a short time on the Sandon property. He was satisfied it would be to their interest to consider that suggestion. He also found fault with the bean crop. In his neighbourhood they considered that a

cleansing crop, and looked to it to extirpate weed; but he had seen more weed going to seed in beans than he had ever seen before, and he was sure they would agree with him that could not be right; and although he had seen it beyond the Sandon estate as well as upon it, he hoped that the Sandon tenants would set the example of avoiding it. Another still greater grievance was the extent to which thistles were allowed to go to seed in the district. Now that was an injury not only to a man's own farm, but to that of his neighbours, and against which they had no possible remedy. He should like to see thistles exterminated in Staffordshire as soon as possible; but the only way to promote that was to set their neighbours a good example. He had adverted to those three points that had struck him, and was sure they had too much common sense to complain of his candidly stating his views; and he assured them that he was anxious to give them every encouragement, as was, he was sure, the desire of Lord Hartowly, who would be proud to be able to say that the Sandon estate was one of the best farmed estates in Staffordshire. Living, as he did, on one of the highest farmed districts in England, he could not but be struck with anything which appeared inconsistent with good farming.

CHIPPENHAM AGRICULTURAL SOCIETY.

ANNUAL MEETING AND CATTLE SHOW.

The annual meeting of this flourishing and useful association was held on December 3, at Chippenham, and one of the largest and best the society has ever had. For the President's premiums for bull, cow, and offspring there were no fewer than six competitors; and finer animals than those shown by Mr. Richard Stratton, which took the first prize, it would be difficult to find in this or the adjoining counties. There were some capital milch cows and heifers, but the condition of some of them appeared to be a little too high for ordinary stock purposes. There was a spirited competition for the prizes offered for bulls and bull calves. In the extra stock department a cow with three calves, belonging to Mr. Reeves, of Lynham, attracted great attention. The calves, which were dropped on the 16th February, are of a rich roan colour, strong, and of a good size; and the cow, a very handsome animal, is in milk at the present time. Sheep formed but a poor show, there being no competition excepting in one class.

As might have been expected, in a rich dairy district like that by which Chippenham is surrounded, the premiums offered by the Marquis of Lansdowne, for the best cwt. of bread and the best cwt. of thin cheese, had the effect of bringing a host of competitors. In the former class there were 17 lots, all well made, and apparently of excellent quality. Of thin there were also eight or nine lots.

The judges of stock were Messrs. Thomas Little, W. Peacey, and G. Hulbert; those of cheese, Messrs. Joseph Hull, James Miles, and Samuel Gayton.

The following is the list of prizes:

Bull, cow, and offspring (the President's premiums).—First prize, £10, Mr. Richard Stratton, of Wall's Court, Bristol; second, £5, Mr. James Goulter, of Acton Turville.

Fat steer.—First prize, £8, Mr. W. H. H. Hartley, of Lyegrove; second, £4, Mr. Thomas Ferris, of Manningford Bohune.

Fat cows.—First, £6, Mr. T. Ferris, of Manningford Bohune; second, £4, Mr. W. W. Hartley, of Lyegrove.

Milch cows of any age.—First prize, £5, Mr. Wm. Sly, of Kellaways; second, £4, Mr. James Fry, of Lacock. £5, given by Mr. S. Wittey, Mr. R. P. Rich, of Chippenham.

Milch cows under 5 years old.—First prize, £4, Mr. Wm. Sly, of Kellaways; second, £3, Mr. J. Hibbard, of Stanton St. Quinton.

Heifers under 36 months old.—First prize, £4, Mr. W. Sly, of Kellaways; second, £3, Mr. C. Burbidge.

Heifers under 24 months.—First prize, £4, Mr. R. P. Rich, of Chippenham; second, £3, Mr. C. Burbidge.

Heifer calves.—Lord Methuen's premium of £5, Mr. R. Stratton.

Bull calves.—Lord Methuen's premium of £5, Mr. R. Stratton; second, £2, Mr. J. Hibbard, of Stanton St. Quinton.

Bulls above 1 and under 2 years old.—£5, given by Mr. Mr. W. H. H. Hartley, Mr. W. Spencer, of Chalfeld.

Bulls above 2 and under 3 years old.—£5, Mr. R. Stratton.

Working oxen.—£3, Mr. G. Brown, of Avebury.

Eight short-wool breeding ewes.—£4, Mr. John Smith, of Bynoll Farm.

Eight long-wool breeding ewes.—£4, Mr. G. Limbrick, of Horton.

Eight cross-bred breeding ewes.—Premium given by R. F. Long, Esq., M.P.—First prize, £4, Messrs. Jas. and Jos. Fry, of Oldfield, Marshfield; second, £2, Mr. Jos. Whaley, of Corston.

Horses.—Two-year-old gelding or filly.—Mr. Henry Sly, of Lacock.

Mares and foals.—£5, given by Mr. G. M. M. Esmeade, of Thomas Lavington, of Poulshot.

Pigs: Boars.—First prize, £2, Mr. James Goulter, of Acton Turville; second, £1, Mr. H. Humphrey, of Shrivenerham.

Breeding sows.—First prize, £2, Mr. John Baker, of Alton; second, £1, Mr. James Goulter.

Two fat pigs: of one litter.—£3, Mr. R. Spackman, of Broughton Gifford.

Fat pigs: of any age.—Mr. W. B. Reeves, of Thickthorn.

EXTRA STOCK.

One cow and three calves, Mr. Reeves, of Lynham. Four fat long-wool ewes, Mr. G. Limbrick, Horton. Fat heifer, Mr. R. P. Rich, Chippenham. Four fat cross-bred ewes, Mr. R. P. Rich. Nag colt, Mr. W. Butler, Beaman. Two fat short-horn oxen, Mr. S. Gayton, Trowbridge. Two fat Scotch heifers, Mr. S. Gayton. Five fat sheep, Mr. Gayton.

CHEESE.

Premiums given by the Marquis of Lansdowne.—For the best cwt. of broad cheese, £3, Mr. R. P. Rich, Chippenham; second, £2, Mr. C. Beaven, Shipton Moyne. Commended, Mr. T. Newman, Cray's Marsh. For the best cwt. of thin cheese, £3, Executors of the late Mrs. Bridge, second, £2, Mr. W. Spackman, Chalfeld.

RUTLAND AGRICULTURAL SOCIETY.

The 37th anniversary of this Society was held at Oakham on Thursday, Nov. 28, under the most encouraging auspices. The entries for horned cattle were exceedingly numerous, and the quality of the animals exhibited was good. In the class for milking cows the competition was keen, there being 14 animals, none of which was of an inferior character. The prize cow attracted much notice, as did also one that took the second premium. The prize ox was bred and fed by Mr. Wood, of Clapton. There was also a very handsome Scotch ox exhibited by the Marquis of Exeter, which deservedly carried off the prize, a silver medal. The noble lord was highly commended for a very fine Shorthorn steer, and it was considered by many competent judges that it was more deserving of the second prize than Mr. Speed's steer: the judges had considerable difficulty in deciding to which to award the prize. The cottagers' class was likewise well represented, both in numbers and quality. The best beast in all the classes was a heifer, rather small, but of perfect symmetry; it was shown by Mr. Chapman, of Exton, who also took several other prizes. The beasts were ranged in stalls extending the whole length of the Riding-school, and presented a very interesting picture. The sheep contained some fair specimens of both wool and mutton. The principal exhibitors in this department were Colonel Lowther and Lord Berners, and the former carried off the chief of the prizes awarded. The entries in all the horse classes were large, especially the nag horses, and amongst them were some valuable animals. The hunters and other descriptions were all tried in a field close to the Riding-school before the prizes were awarded, and, as usual, attracted a great many spectators. The poultry pens presented an extraordinary sight. It was considerably the largest display of the feathered tribe that has been seen in Oakham, and for breed and quality some of the birds might vie with the great exhibitions of poultry at Birmingham. There were upwards of 740 pens of different kinds, and the prices put upon some ranged exceedingly high.

The judges of stock were Mr. J. Topham, of Welford; Mr. J. Eade, of Earl's Barford; and Mr. R. Johnson, of Westboro', near Newark. Of poultry, Mr. Thos. Challoner, of Bailborough, Chesterfield; Mr. Edward Hewitt, of Sparkbrook, Birmingham; and Mr. Thos. Tatham, of Kingsthorpe. Of shoeing, Mr. Wattam, of Stamford.

CATTLE.

Best ox or steer, of any breed or weight, exceeding three years and three months old (open to All England), 1st prize of £15, and Uppingham School medal, and extra premium of 25 sovs. to Mr. B. Wood, of Clapton; and £7 to Mr. T. Pulver, of Broughton.

Best ox or steer, of any breed or weight, not exceeding three years and three months old (open to All England), £10 to Sir W. de Capell Brooke, Bart., of Geddington Grange; and £5 to Mr. C. Speed, Exton. The Marquis of Exeter, and Mr. Stevens, of Collyweston, highly commended.

Best cow or heifer, of any breed, age, or weight (open to All England), £10, to Mr. E. Wortley, of Ridlington; and £5 to Mr. Chapman, of Exton.

Best steer, under two years and six months old, fed within the district, £10, to Mr. T. Pulver, Broughton; and £5 to Mr. Chapman.

Best cow, in-milk or in-calf, £8, to Mr. J. Lynn, of Stroxtou; and £4 to Mr. C. J. Bradshaw, of Burley-on-the-Hill. Mr. C. Speed, of Horn Mills, highly commended; Mr. E. Wortley, of Ridlington, and Mr. R. Searson, of Cranmore Lodge, commended.

Best heifer above two and under three years old, £6 to Mr. R. Searson, of Cranmore Lodge; and £3 to Mr. Chapman, of Exton.

Best heifer under two years old, £5 and extra prize of £10 to Mr. Chapman, of Exton; and £3 to Mr. E. Wortley, of Ridlington. Mr. C. Speed, of Horn Mills, and Mr. J. Snodin, of Stonesby, commended.

Best bull above one and under two years old, £10 to

Messrs. R. and J. Fisher, Ashwell; and £5 to Mr. C. O. Eaton, Toilethorpe. Mr. R. Pinder, of Whitwell, commended. Best bull above two and under four years old, £10 to Mr. Chapman, Exton.

Best cow in-milk, £5 to Mr. J. Edgson, Langham; and £2 to Mr. G. Chester, Waltham.

Best heifer under three years old, £4 to Mr. W. Buttress, Oakham; and £2 to Mr. J. Healey, Burley.

Best heifer-calf under twelve months old, £2 to Ann Wright, Burley; and £1 to Mr. G. Chester, Waltham.

Best breeding beast, £5 to Mr. J. Harris, Langham.

Best breeding beast, a silver medal value £3 to Mr. W. Colwell, of Liddington.

Best fat beast, £5 to the Marquis of Exeter.

SHEEP.

Best three long-woolled fat wether sheep, a silver cup of £10 to the Hon. Colonel Lowther, Barleythorpe Hall; £4 to Lord Berners.

Best three long-woolled fat wether sheep, £10 to Mr. W. Shipman, of Waltham.

Best three short or long-woolled cross-bred fat wether sheep, £10 to the Hon. Col Lowther; £4 to the Marquis of Exeter.

Best four long-woolled breeding ewes, £5 to Mr. E. Wortley, of Ridlington; £3 to the Hon. Colonel Lowther.

Best four long-woolled theaves, £5 to the Hon. Colonel Lowther; £3 to Mr. W. Shipman, of Eaton Lodge, Waltham.

Best four long-woolled wether lambs, £5 to the Hon. Col. Lowther; £3 to Mr. C. J. Bradshaw, of Burley-on-the-Hill.

Best four long-woolled ewe lambs, £5 to the Hon. Colonel Lowther; and £3 to Mr. W. Shipman, of Eaton Lodge, Waltham.

Best sheep shown as extra stock, a silver medal value £3 to Mr. W. Shipman, of Waltham.

PIGS.

Best fat pig under 18 months old, £5 to Mr. J. Lynn, of Stroxtou.

Best fat pig under 10 months old, not to exceed 30 stone live weight, £5 to Mr. J. Lynn, of Stroxtou; and £3 to Messrs. W. Carver and Sons, of Ingarsby.

Best fat pig of any weight, £2 to Mr. J. Watkin, of Langham.

Best in-pigged or suckling sow or yelt, £3 to Messrs. W. Carver and Sons.

HORSES.

Best mare for agricultural purposes, £5 to Mr. C. T. Chapman, of Langham.

Best two-year-old gelding or filly, for the general purposes of agriculture, £3 to Mr. J. Sleath, of Braunston.

Best four-year-old hunting mare or gelding, £25 to Mr. T. Stokes, of Caldecote; and £10 to Mr. S. Walton, of Thorpeby-Water.

Best hunting mare or gelding, £20 to Mr. T. Percival, of Wansford; £10 to Mr. S. Gale, of Kelmahar; and £5 to Mr. W. Woods, of Edithweston.

Best mare for breeding hunters, £7 to Mr. R. Healey, of Hambleton; and £3 to Mr. W. Keal, of Oakham.

Best hackney mare or gelding, £10 to Mr. E. Stokes, of Bulwick; and £5 to Mr. W. F. L. Hack, of Silk Willoughby, Slanford.

Ponies under 7 years old, £3 to Mr. G. Brown, of Cottersmore; hunting whip to Mr. W. King, North Luffenham.

SALE OF THE LATE MR. DODWELL'S SHORT-HORNS.—This herd of pure-bred animals was sold under the auspices of Mr. Strafford, at Long Crendon, near Thame, when, on the first day, 58 lots made an average of £21 3s. 1d. per head, and, on the second day, 48 lots £19 18s. 7d. each. Colonel Loyd Lindsay gave fifty guineas for a cow called "Red Rose," but the others brought wretched prices.

THE MEETING OF BUTCHERS AND SALESMEN.

Pursuant to the notice issued, a public meeting was held at the Freemasons' Tavern, "to determine what steps should be taken to prevent the arbitrary and unjust restrictions that would be inflicted on the trade by the adoption of the proposal to compel all foreign cattle imported into London to be slaughtered in abattoirs adjoining the market."

The meeting was not numerously attended.

Mr. Varley occupied the chair.

The CHAIRMAN, in opening the proceedings, said an attempt had been made to impose restrictions on the trading in cattle, to the effect that all foreign cattle purchased in Copenhagen market should be killed. That suggestion had emanated from the Corporation of the City of London. £36,550 was the sum of money voted for the erection of abattoirs in that market. The butchers of London did not regard their friend Mr. Rudkin with confidence; and they could not afford to have a man in his position, whose apparent object was to play into the hands of the Corporation, of which he was the servant. The Government felt it necessary to do something with reference to the disease in cattle; and, whether they were right or not in the steps they took, they had felt it necessary to have foreign cattle slaughtered at the port of debarkation. To justify that course, the Government must convince the butchers that rinderpest was prevalent in the foreign countries from which the cattle came. In Scotland the cattle-disease had disappeared, and the time when restrictions were necessary had passed away, and the restrictions should pass away now. If they were to kill their cattle at the Caledonian-road, or at the ports where they arrived, it would lead to much inconvenience and loss; and the offal must be wasted. He expressed his disgust at the journals which had inserted letters condemning the butchers, and refused to insert the replies. They accused butchers of charging too much. Why, he should like to know, did the *Times* charge 3d., when the best daily paper could be bought for a penny? Why should a certain profession charge 6s. 8d. for the dictation of a single letter? Surely there were anomalies enough—they came thick and fast—if the papers wanted them to attack. For his part, he was prepared to take as his net profit (after providing economically for his family), for the past ten years, 4 per cent.

Mr. WOODLEY moved, "That this meeting is of opinion that the establishment of abattoirs at the port of landing or at the market, with a view to the compulsory slaughter of all foreign cattle therein, instead of leaving the same in the hands of the trade as at present, will be most prejudicial to the trade and the public." He argued that the effect of such arrangement would be to put an end to the business of small butchers altogether, and to those who carried on extensive businesses it would involve a very large additional expense, and this he did not think would tend to the cheapening of meat. The imposition of restrictions and the establishment of a monopoly had certainly never had that tendency, and he did not believe it ever would.

Mr. MORRICE seconded the motion. He pointed out that the public would be put to an expense of £80,000 a-year if these public abattoirs were established, and expressed his belief that the trade had no confidence in the chairman of the markets committee (Mr. Rudkin). He defended private slaughter-houses as necessary to the carrying on of the trade, and on the ground that they were by no means injurious to the public.

Mr. GUERRIER condemned the course the discussion had taken: he saw no advantage to be derived from the indulgence in personalities or condemnation of the corporation. He ended not whether the corporation built abattoirs or not; it was for the butchers to show whether they would use them. They had to look to the Government, and see that no legislation was enacted to force them to do so; it was in that direction they should endeavour to use their influence.

Mr. BREWSTER concurred that the matter they had to deal with was the course Government might take. All the corporation proposed to do was to build certain abattoirs, for which they said they had tenants. The Government, on the other hand, proposed to place the slaughter-houses on the river side.

Mr. RUDKIN said Mr. Brewster had rightly stated the intention of the corporation. As to the statements which had been made with reference to himself, they were utterly untrue.

The resolution was put and carried unanimously.

At this period of the proceedings a party arrived in front of the tavern, and went through a not very complimentary nor melodious performance on the "marrowbones and cleavers."

Mr. GIBBARD moved: "That in the opinion of this meeting the establishment of a separate market for the sale of foreign cattle will be inconvenient, will decrease competition, tend to diminish the importation of cattle, and increase the price of meat." He pointed out that the question was not only for the producers, but for the consumers, and they must act together to resist the measure, if they desired to get meat at a reasonable price.

Mr. MONCK seconded the motion, and it was carried *seco*.

Mr. PICKWORTH moved: "That this meeting pledges itself to oppose with the utmost vigour any plan which will prevent the most free and open competition in the cattle and meat trades, or which will compel the slaughter of cattle away from the butchers' premises."

Mr. SHORT seconded the motion, and it was put and carried unanimously.

A number of butchers were selected to act with the committee of the Butchers' Trade Society in forming a deputation to the Government, and to take such other steps as they considered necessary to support the views of the meeting.

The deputation subsequently had an interview with Lord Robert Montagu; when, however, no definite answer or promise was given on the part of the Government.

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The monthly meeting of the directors of this Society was held last month. The Duke of Buccleuch and Queensberry, K.G., president of the Society, in the Chair.

The next half-yearly general meeting of the Society was fixed, in terms of the charter, for the 15th of January.

Certain subjects for which premiums had been offered in the list for 1887 were deleted, approved papers having been received. Amongst the new subjects are—Reports: On the agriculture of East Lothian; on the duties of the veterinary surgeon in the examination of horses as to soundness; on pleuro-pneumonia, its reported disappearance during the restrictions on the movement of cattle, its re-appearance when the restrictions were removed, and the best method to be adopted for its eradication; on disinfecting agents, especially of sulphurous acid and carbolic acid, for preventing attacks of cattle plague and pleuro-pneumonia, or in extirpating the disease when they have appeared; and on the profitable extension of the poultry department in a mixed farm in Scotland.

The Secretary reported having attended a meeting at Aber-

deen on the 29th November, when the premium-list, as printed, had been approved of, except in reference to the services of the first-prize thoroughbred-horse, the members in the Aberdeen district being of opinion that the owner should be bound to travel the horse through the season, or the following season in the district. It was moved by Mr. Dudgeon, seconded by Mr. Heddie, of Melsetter, and unanimously agreed, to acquiesce in the prayer of the memorial, and to attach a condition to the premium, that the horse shall be bound to serve in the district.

Letters from Mr. Johnston, Rockmount, Newtown-Stewart, Ireland, on the cause and cure of finger-and-toe in turnips, and from Mr. Mason, of Meadowbank, Edinburgh, on experiments with sewage manure, were laid on the table.

The Secretary stated that the presentation of the testimonial to the Rev. Patrick Bell, the inventor of the reaping-machine, would take place at the general meeting of the Society, on the 15th of January.

CENTRAL CHAMBER OF AGRICULTURE.

The annual meeting of the Central Chamber of Agriculture was held on Tuesday in the Smithfield Show week, at the Haover Square Rooms, Mr. ALBERT PELL in the chair. There was a good attendance of members, including a few M.P.

The following report was laid before the meeting, and ordered to be printed :

In presenting their annual report the Council have to congratulate the members upon the great progress of the Chamber movement. Since the last annual meeting the total constituency of members of Chambers has increased 200 per cent., numbering nearly 9,000 owners and occupiers, and persons interested in the land. Thirty-two provincial chambers are now affiliated with the Central Chamber, contributing to the funds and sending deputies to its council meetings. The Scottish Chamber of Agriculture is in corresponding association, and eight other chambers are reported to the secretary as formed or in course of formation. The solvent condition of the exchequer appears from the treasurer's financial statement; but the council have not felt justified in starting a London establishment beyond having an office in a good position at the West End. However, the openings for extended operations are so important that the council would urge the desirability of multiplying the present number of members as quickly as possible. Activity and intelligence in a large number of provincial chambers may be fundamental to success, but the speedy organization of agricultural public opinion can be secured only through the agency of a central chamber capable of both powerful and comprehensive action. At so early a period of its career, the Chamber movement can hardly be expected to claim any great victories for the cause of agriculture, and the council might have been content with alluding to the measure of deference already paid to the voice and decisions of the Chambers by members of the Legislature, by the press, and by the agricultural classes literally from the Land's-End to John O'Groats, and from Norfolk to Carmarthen, whose instinct is prompting them to rally round the banner raised for their union and defence. Still, though the Session of 1867 afforded small scope for the agitation of questions in which the Chamber is interested, and provided little work for either our "standing committee for Parliamentary business" or our "standing committee for general business," the council can appeal to certain palpable results warranting the conclusion that the efforts of the youthful Chamber have not all been preparatory and expectant labour. The momentous object of safety for our herds and flocks against imported disease was prominent in last year's report. Resolutions passed at the first annual meeting, which was fully reported in the agricultural and other papers, were forwarded to the Lord President of the Privy Council, whilst similar resolutions were presented by a deputation to her Majesty's Secretary of State for the Home Department. In June of the present year the Council promptly issued the draft of a petition praying for the immediate slaughter or effectual quarantine of imported animals at the ports of landing without their previous intermingling with home-bred animals; and these petitions being very numerously signed by nearly all the provincial Chambers, were presented to the House of Commons just before the third reading of the Contagious Diseases (Animals) Bill. Following upon the agitation, a public meeting of the members and friends of the Chambers was held at Bury St. Edmunds in July, and attended by representatives from 14 districts. Resolutions were passed in favour of seaport-slaughter, or effectual separation of foreign from home-bred animals; and, on the very next day, copies of those resolutions were delivered to 250 metropolitan and county members of Parliament, with circulars requesting them to support Mr. Ayrton's amendment and new clause then before the House for establishing a universal market for the metropolis. Again, on November 5, the question of separate markets for foreign animals was discussed by a Council meeting, including deputed members from 14 Chambers. Resolutions also being read from four others, a resolution was passed in favour of waterside markets for the sale and slaughter of im-

ported cattle, and urging the regulation of importations of sheep. A deputation was appointed to submit the resolution to the Home Secretary, the provincial Chambers being invited by circular to send up representatives to strengthen the influence of the deputation. However, it was gratifying to find that, after persistent pressure put upon the Government—a pressure of public opinion, to which the oration of the Chambers and the zealous advocacy of members of Parliament who are earnest friends of the Central Chamber had largely contributed—an official announcement was made of a forthcoming bill, promising to realize what the Chamber had all along demanded. In the opinion of the chairman of the Council, meeting in consultation with various members of Parliament, the deputation was no longer needed, and hence it was postponed, but not without one or two miscarriages of the notice circular, and subsequent trouble and expense to several noblemen and gentlemen, for which the Council offer their apology. The abolition of turnpike trusts, the future maintenance of public roads, and the liquidation of turnpike trust debts, formed the subject of a Council meeting on the 5th of Nov. Deputed members attended from 13 Chambers, and the resolutions arrived at were presented by a deputation to the Home Secretary, Mr. Walpole, who promised his best attention to their claims. This expression of opinion cannot fail to have exerted an influence upon the fate of Mr. Hugesson's bill, to the claims of which the resolutions were opposed. The rating, valuing, and assessing of property, especially of woods, game, and metallic mines, and the provisions of Mr. Hunt's (valuation of property) bill were discussed at a Council Meeting on the 2nd of April, attended by deputies from thirteen Chambers. Full reports of a very able debate appeared in the agricultural papers. Resolutions were passed approving the general principle of Mr. Hunt's bill; but objecting to several clauses, and requesting the Select Committee of the House of Commons to hear evidence on the subject from witnesses appointed by the Chamber. The Chamber was deputed to seek an interview with Mr. Hunt on the question. A Council Meeting on the 18th of June considered the subject of the employment of women and children in agriculture, and the proposed legislation thereon. Deputed members attended from sixteen Chambers, and, after a practical discussion fully reported in the agricultural newspapers, a resolution was passed sympathising with the efforts for an improved education of the labouring classes; but declaring Mr. Fawcett's bill to be impracticable and inadequate to the requirements of rural districts, and recommending a postponement of legislation on the subject, until the Royal Commission shall have published its report. It is not arrogating any achievement to the Central Chamber to say that such a strong expression of opinion by the representatives of large bodies of agriculturists in so many parts of the kingdom contributed to the withdrawal of Mr. Fawcett's bill, and that the able and outspoken debates in provincial Chambers upon the subject of agricultural gangs did much towards securing a mild and wise measure for the suppression of the evils complained of. At the last Council Meeting held on the 5th of November a resolution was passed to the effect "That the Central Chamber pledges itself to use its best endeavours for obtaining a repeal of the malt-tax;" and in accordance with instructions resolved upon at that meeting the society has obtained from provincial Chambers the names of gentlemen recommended as witnesses to give evidence before the Malt-Tax Committee of the House of Commons. The next subjects to be considered by the Chamber were fixed to be Education and the working of the Highway Act.

The CHAIRMAN stated that the president for the coming year would be Mr. Jasper More, M.P., he having filled the office of vice-president during the past year; it would, therefore, be necessary to elect a vice-president for the year 1868, who in his turn would succeed to the presidency of the Chamber of 1869.

Mr. T. HOLLEY, Jun., had great pleasure in moving the election of Mr. C. S. Read, M.P. for Norfolk, who from the moment the institution was started had devoted much of his

time and attention to rendering its operations efficient and useful.

Mr. DUCKHAM seconded the motion, and expressed the obligations which the agricultural community were under to Mr. Read for the able manner in which he had advocated their interests both within and without the walls of Parliament.

The question on being put from the chair was carried unanimously.

Mr. READ, M.P., returned his grateful thanks for the honour they had done him. He could have wished that their choice had fallen upon one who had more leisure and ability to conduct their business satisfactorily; but he should have so good a friend and colleague in their next president, Mr. Jasper More, that he was sure the burden would be light in 1888, although important duties might devolve upon him in the succeeding year. He rejoiced at this, because he had the honour of having been elected chairman of the Central Farmers' Club for 1888, and a great number of persons had told him that that was the very reason why he ought to be vice-president of the Chamber of Agriculture, inasmuch as it would show that there was no antagonism between the two institutions (Hear, hear); that there was not only room but a necessity for both; and for his own part he felt convinced that the interests of the two would never clash (cheers).

The following eight gentlemen, members of the Council for the past year, having either not attended the Council Meetings at all, or not more than once during that period, namely, Mr. Jeremiah Abbe, Mr. J. Baldwin, Mr. W. Biddell, Mr. J. Birditt, Mr. Chapman, Mr. Clare, Mr. Lythall, and Mr. Osborne, were declared retiring members, but eligible for re-election.

On the motion of Mr. Brandram (Ware), seconded by Mr. T. Brown (Downham Market), it was agreed that no one should be eligible for re-election to the Council until he had been a member of the Chamber for one year, and paid-up his subscription for the ensuing year.

The vacancies in the council, being in the proportion of one-third of the whole number of that body, caused by the retirement of the above-mentioned gentlemen, were subsequently filled up by the election of the following: Mr. Biddell, Mr. Hawley, Mr. Andrews, Mr. J. Howard, Mr. Webb, Lord Lichfield, Mr. Tomline, M.P., and Mr. Brandram.

Prior to this list being settled

Mr. MASEN (Wolverhampton) objected to any such infusion of the landlord element in the council as would give that interest a preponderance in the management for the next three years. He had no personal objection to any of the names proposed, but the Chamber was on its trial, and he did not desire to be taunted by his brother-farmers with assisting to fill up the ranks of the Council with men who were really not agriculturists.

Mr. KIRKHAM (Lincolnshire) referring to the name of Mr. Tomline, M.P., reminded the meeting that that gentleman was not only a large landowner, but a capital farmer, and moreover that he took a deep interest in the proceedings of the Chamber.

Mr. JASPER MORE, M.P., so far from agreeing with Mr. Masen, was of opinion that the landowners were not sufficiently represented in the Council. There were 24 members in the Council in the whole, but Mr. Masen seemed to argue as if there were only eight.

Mr. MASEN observed that he meant his remarks to apply to the selection of that day, and not to the entire Council.

The Rev. EDWARD SMYTHIES, who moved the adoption of the list, said he had a strong conviction, which was shared in by a large number of persons, that if the Chamber wished to fulfil the object for which it was formed, and to become useful to the tenant-farmers themselves, nothing would be more disastrous than for the idea to get abroad that it was composed exclusively of one class alone. In his opinion it would be a fatal notion to suppose that only tenant-farmers could advocate the interests of the land. The truth was, that the interests of landlord and tenant were bound up together, and if a beneficial influence was to be exercised over the two Houses of Parliament, they might depend upon it that it must come from a united body having a common interest in the land.

Mr. H. NEILD (Worsley, Manchester), concurring in the view enunciated by Mr. Smythies, said that without a perfect union between landlord and tenant, these Chambers of Agriculture would do no good whatever.

The discussion then dropped; and Mr. Clare, the Rev. Edward Smythies, and Mr. Willson (Lutterworth) were appointed auditors for the ensuing year.

A conversation arose on the subject of the subscriptions of local Chambers, through a tentative motion proposed by Mr. Duckham for an alteration of the second rule relating to subscriptions, the object of which was to give the provincial Chambers a more influential representation in the Central Chamber, and at the same time augment the funds of the latter. This he proposed to do by substituting a new rule to the effect that provincial Chambers should be admitted into association with the Central Chamber, in the same manner as individual members, and have the power of sending a deputed member to the Council Meeting of the Central Chamber, upon paying in advance the sum of £3 per annum, and an additional deputed member for every further sum of £3 subscribed; but that the number of deputed members allowed to any provincial Chamber should not exceed one for every fifty members forming that Chamber. This proposition Mr. Duckham laid before the meeting simply in accordance with the views expressed to him out of doors, and for the purpose of getting the opinion of the Chamber pronounced on the subject of representation; and with the like object Mr. Read, M.P., seconded it.

The CHAIRMAN pointed out that the adoption of such a rule would be the introduction of a system of representation based upon the principle of numbers; and if that principle were put in practice it would become necessary for the central body to be furnished annually with a return from every associated local Chamber, of the actual *bond fide* members on its register who had paid up their subscriptions, or they would lay themselves open to this unintentional piece of deception that a larger local Chamber might be formed of non-paying members, who on the score of their numbers alone would be able by their representatives to out-vote the smaller provincial Chambers whose members had paid up.

Mr. WILLSON remarked that, as there were some Chambers with less than fifty members, if the proposal were adopted these would all be excluded from representation in the Council.

Mr. WHITTAKER (Worcester Chamber) spoke in favour of the general principle of increasing the subscriptions of the local Chambers, on the ground that the battle was not to be fought without money. If the work in which they were engaged was to be done effectually, they must follow the example of the Chambers of Commerce, and do it with no niggardly hand.

Mr. READ, M.P., reminded Mr. Whittaker that whilst a great many of the local societies were prosperous and flourishing, there were others that had to struggle for bare existence; and there was nothing in the rules to prevent the former from subscribing as liberally as they pleased.

Mr. ANDREWS (Somersetshire) feared that to fix the subscription for admitting local associations at a higher standard than at present would have the effect not only of cutting off these bodies from the Central Chamber, but of preventing their establishment at all. The existing rule had better therefore be adhered to.

Ultimately the motion of Mr. Duckham was negatived; and a similar result attended a motion of Mr. T. HORLEY's, seconded by Mr. STARTIN, to amend Rule 2, by substituting £5 for £3, and £3 for £2. The original rule was therefore retained; the CHAIRMAN remarking that he was thankful for it.

The CHAIRMAN, referring to cattle importation as the next question on the agenda-paper, said that the bill promised by the Government had been introduced into the House of Commons and read a first time; but that it had not yet been printed.

Mr. WILLSON intimated that it would be in print by the end of the week.

Mr. T. HORLEY would like to know whether Mr. Read deemed the measure satisfactory?

Mr. READ explained the course which had been taken with regard to postponing the deputation appointed to wait upon the Home Secretary. It had been understood that Mr. Jasper More and himself, with several other members of the House of Commons, being members of the Central Chamber, should be considered the petitioning committee; and when the announcement appeared in the Queen's Speech on the opening of Parliament that their desires with regard to cattle importation and the establishment of a separate market for foreign animals

were conceded by the Government, he deemed it necessary to call the members of the committee together, when it was unanimously resolved that it would be most expedient to postpone the deputation until such time as they had the bill in their hands. Up to this moment, however, they had not had an opportunity of seeing the bill. They were therefore still in ignorance of what was its exact nature; but he believed the Government proposed that, first of all, the Corporation of London should have the chance given them of building a metropolitan market for foreign cattle; next, that in the event of the Corporation not doing it, it should lapse to the Metropolitan Board of Works, and, in case they declined, that certain commissioners should undertake the task. He did not doubt that the Corporation of London would undertake it. Therefore, as regarded the establishment of a cattle market, they might consider that object as almost accomplished. His own opinion, however, was that the main defect of the bill would be that it did not include sheep and pigs. He had prepared a resolution to the effect that, as a Chamber, they were grateful to the Government for introducing the bill, but that they considered it to be absolutely necessary that the bill should include all foreign imported animals. He need not go into the reasons why. Then, if they were going to exclude imported diseases effectually by establishing a foreign cattle market, let it be a real good cattle market, and such as was likely to attract the largest quantity of meat.

A MEMBER inquired whether the new market would be provided with the requisite accommodation for slaughtering?

Mr. READ presumed that it would.

The MEMBER asked whether there was a clause in the Bill in favour of store stock?

Mr. READ answered in the affirmative. It provided that the Government should be empowered to appoint a certain place for the quarantine of store stock.

Mr. NEILD: The matter was not clearly understood in the country; and it was in the question of what were to be the regulations respecting store stock that all their uneasiness lay.

Mr. ANDREWS said that, as he understood Mr. Read, the Government Bill applied entirely to the metropolis; he wished to know whether it was decided that the same principle should be adopted for every inlet through which foreign cattle could come in; because, if these regulations were adopted for London only, and other doors were left open for cattle to be imported, he apprehended that the danger would not be diminished, but be just as great as it was now.

Mr. READ could only say that at all the ports of landing except the metropolis there were separate markets where cattle were now slaughtered. It was only in the metropolis, however, that imported cattle were allowed to be removed from the point of landing to a market where they were mixed with other cattle. The Government Bill simply referred to the metropolis; but in the resolution he had drawn up he expressed the hope that the regulations for the metropolis would be extended to all other ports of debarkation.

Mr. ANDREWS had put the question, because he was led to believe that no complete arrangement had been made at the other ports of debarkation, and that none could be made unless those ports were defined and limited to a certain number.

The CHAIRMAN: Not only the ports but the parts of ports must be defined. The port of London was about a hundred miles long.

Mr. ANDREWS meant to say that every port of debarkation ought to have an enclosed market at the waterside, out of which no animals should go alive.

The CHAIRMAN: That was the object of the Bill introduced by the Government.

Mr. WILLSON said that by writing to the clerk in charge of the Bill-office, 39, Abingdon-street, enclosing postage stamps, gentlemen could be supplied with copies of the Bill in the course of a few days. They could then discuss it in the several local chambers.

Mr. JASPER MOKE, M.P., assured Mr. Andrews that the quantity of store stock imported was extremely small, and the Government believed that their arrangements on this head were such as to ensure the utmost security. The fears which prevailed on the point in country districts, therefore, were really without foundation. In fact, no store stock had been imported for some time past except fancy animals.

Mr. READ: Only one port was licensed, and that was Southampton,

The CHAIRMAN might mention that in one year (1866) two hundred and twenty-seven thousand head of foreign horned stock, or thereabouts, entered England, and of these six out of every seven came into the Metropolitan Market. The main point therefore must be, to stick to the Metropolitan Market.

Mr. T. HORLEY thought it would be imperative upon the Central Chamber to see that the Bill included sheep and pigs, and that it behoved every gentleman present, on returning home, to do all he could to bring the influence of the local Chambers upon Members of Parliament with the same object, and thus secure the passing of the Bill through its various stages.

Mr. READ then formally proposed his resolution as follows:—"That this Chamber regards with satisfaction a Bill introduced by the Government for establishing a separate market for the sale and slaughter of foreign cattle in the metropolis; but it considers it essential that the Bill should include sheep and pigs, and that the same regulations should apply to all other ports of landing."

The motion, having been seconded by Mr. Willson, was put and carried unanimously.

At the instance of Mr. Gardner, seconded by Mr. T. Horley, it was also ordered that the resolution should be printed and circulated amongst the local Chambers, with a request that they would give it their support.

A vote of thanks was then moved by Mr. Arkell, seconded by Mr. Brandram, and passed by acclamation, to Mr. Albert Pell and the Council for the manner in which they had discharged their duties during the past year.

Mr. PELL acknowledged the compliment, and asked leave, at vacating the chair at the termination of his year of office, to allude to the subject which had first introduced him to their notice and first imparted life to the institution. Going back to the St. James's Hall Conference, he wished to direct attention to the fact that within one month of holding that assembly, out of which came the Chambers of Agriculture, the Royal Agricultural Society, and at a little earlier date the Central Farmers' Club, had interviews with the Home Office and the Privy Council, and, singular to relate, in both instances the importation of foreign stock was utterly overlooked. Now to-day, at the close of the second year of office, he was gratified by the completion of the scheme which he had formed in his own mind as far back as the month of November 1865; in proof of which, he begged to refer them to the second resolution which he drew for the St. James's Hall Conference, and which was to the effect that all foreign animals should be prohibited within metropolitan limits. If nothing else than this had been done by the Chamber they would have much to be thankful for; because he did not believe that they would have arrived at that resolution, or the Act of Parliament which they seemed to be on the eve of obtaining, unless the chamber movement had been originated and worked with activity. To those institutions, also, was mainly due the fact that the cattle trade was on its present satisfactory footing. In wishing them good-bye, then, he could only express the hope that in succeeding years all other subjects which came before the Chamber might be as practically dealt with as this had been.

The meeting then separated.

PRACTICAL HINTS.—A coating of three parts lard and one part rosin, applied to farm tools of iron or steel, will effectually prevent rust. Common nails heated red hot and dropped into cold water, will clinch and answer the purpose of wrought nails. The sharp corner of a common Indian arrow-head, or flint, will cut glass effectually. A good waggon jack may be made of boards two or more feet long. Place the board in front of the wheel, one end on the ground, and the other just under one of the spokes, close up to the felloe then take hold of the spoke on the opposite side of the wheel, and lift it, at the same time placing the second board under the axle. In this way a loaded waggon may be lifted with ease. Rusty nails may be drawn from wood without difficulty, by first giving them a blow hard enough to start them a little. A gun will not need cleaning for five years, if the muzzle is tightly corked, and a piece of rubber kept upon the tube under the hammer, when standing idle. —*Practical Farmer.*

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, Dec. 4.*—Present, the Duke of Richmond, K.G., President, in the Chair; the Earl of Powis, Lord Chesham, Major-Gen. the Hon. A. N. Hood, Sir Watkin Wynn, Bart., M.P., Mr. Barnett, Mr. Barthropp, Mr. Bramston, Mr. Cantrell, Col. Challoner, Mr. Dent, M.P., Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P., Mr. Hornsby, Mr. Milward, Mr. Randell, Mr. Shuttleworth, Mr. Torr, Mr. Wells, Major Wilson, Mr. Jacob Wilson, and Dr. Voelcker.

The following new Members were elected:

Bonham, the Rev. John, Ballintaggart, Ballitore, co. Kildare.
Brealey, John, Leek, Staffs.
Byrd, Charles, Littywood, Staffs.
Dickson, George A., Chester.
Golledge, Matthias, Forthampton, Tewkesbury, Gloucestersh.
Green, Alfred, Kinwarton, Redditch, Warwickshire.
Griffiths, Samuel, Overton, Rhuabon, Denbighshire.
Harrison, John, The Willows, Leicester.
Henley, Joseph John, Sherburn Lodge, Tetworth.
Hornblow, W. T. jun., Ripple, Tewkesbury.
Marshall, James, Trinity Street, Gainsborough.
Maude, Colonel George Ashley, Stud House, Hampton Court.
Muntz, George Frederick, Umbrelade Birmingham.
Olver, Richard Sobey, Treasow, Bodmin.
Palley, Joseph, jun., Lower Eaton, Hereford.
Reed, Howard, Sidney, New South Wales.
Rees, William, Pennywann, Lanvabon, Pontypridd, Glamorgan.
Taylor, James, Gorse Lodge, Swansea.
Whitmore, F. H. Wolryche, Dudmorton, Bridgnorth, Salop.
Wilson, Christopher W., High Park, Oxenholme, Kendal.
Stratton, Richard, jun., The Duffryn, Newport, Monmouth.
Stratton, William, Kingston Deverill, Warminster.

FINANCES.—Major-Gen. the Hon. A. N. Hood, Chairman, presented the report, from which it appeared that the Secretary's receipts during the past month had been duly examined by the Committee and by Messrs. Quilter, Ball, and Co., the Society's accountants, and found correct. The balance in the hands of the bankers on the 30th November was £367 8s. 1d. The Committee, having gone through the list of arrears due to the Society, recommend that Messrs. Garrard and James, solicitors, be instructed to write to all defaulters who are in arrear for four years and upwards. This report was adopted.

CHEMICAL.—Mr. Dent, M.P., reported that Professor Voelcker had presented the annual report, containing details of experiments on growth of Clover at Eserick, and various analyses, which will be more fully reported upon for the "Journal." The following analyses were made by the consulting chemist for members of the Society:—

Analyses made for Members of the Royal Agricultural Society of England in 1887.

Guanos	...	...	...	...	30
Superphosphates and other similar artificial manures	...	...	...	...	63
Nitrate of soda and salts of ammonia	...	...	...	...	16
Refuse manures	...	...	...	...	29
Bone-dust	...	...	...	...	11
Limestones, marls, and other minerals	...	...	...	...	53
Soils	...	...	...	...	18
Waters	...	...	...	...	30
Oilcakes	...	...	...	...	63
Feeding meals and vegetable productions	...	...	...	...	19
Examination for poison	...	...	...	...	6
Harvest haymakers' small beer	...	...	...	...	4
Total	...	...	...	...	341

This report was adopted.

LEICESTER MEETING.—Major-Gen. the Hon A. N.

Hood reported the recommendation of the Committee that the Show should close on Tuesday, the 21st July, at 6 p.m.

SHOW-YARD CONTRACT.—Mr. Randell reported that the Surveyor had presented the plan proposed for the show-yard at Leicester, which had been approved, subject to some modifications to be made by the honorary Director; and the Surveyor had been directed to transmit a tracing of the plan to the Leicester Local Committee, in order that the necessary levelling and making of roads may be proceeded with. The quantities of shedding of each sort to be determined hereafter. This report was adopted.

AGRICULTURAL EDUCATION.—The following list of names was placed before the Council, and the Secretary was directed to ascertain whether they would act as examiners:

Mechanics—Mr. C. E. Amos.
Chemistry—Professor Liveing and Professor Voelcker.
Botany—Professor Bentley and Professor Oliver.
Geology—Professor Morris and Professor Ramsay.
Veterinary Science—Professor Simonds and Prof. Varnell.
Land Surveying—Mr. Bailey Denton and Mr. Cadle.
Book-keeping—Messrs. Quilter and Ball.

The examiners in the Science and Practice of Agriculture will be appointed at the period of examination.

COMMITTEE OF SELECTION.—Major-General the Hon. A. N. Hood reported that the name of Mr. John Baldwin, of Luddington, near Stratford-on-Avon, was recommended to the Council in the room of Mr. Pope, deceased. Mr. Baldwin, having been proposed by General Hood and seconded by Mr. Milward, was then unanimously elected Member of Council.

COUNTRY MEETING DISTRICTS.—Mr. Torr, having brought forward a new scheme which had been approved by the committee, was supported by Mr. Jacob Wilson and General Hood, and opposed by Mr. Milward, Lord Chesham, and Mr. Dent. On a division the report of the Committee was carried by 13 yeas to 5 noes, and the following arrangement of the country adopted:

- Durham, Northumberland, and North and East Ridings of Yorkshire.
- Cumberland, Lancashire, Westmoreland, and West Riding of Yorkshire.
- Derbyshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire, Rutlandshire, and Warwickshire.
- Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Huntingdonshire, Norfolk, and Suffolk.
- Berkshire, Buckinghamshire, Hampshire, Kent, Middlesex, Oxfordshire, Surrey, and Sussex.
- Cornwall, Devonshire, Dorsetshire, Somersetshire, and Wiltshire.
- Gloucestershire, Herefordshire, Monmouthshire, Worcestershire, and South Wales.
- Cheshire, Shropshire, Staffordshire, and North Wales.

The Council then resolved that district B be selected for the County Meeting of 1889.

The Annual Reports of all the Standing Committees were presented by the respective Chairmen.

The Standing Committees for 1888, viz., Finance Committee, Journal Committee, Chemical Committee, House Committee, Implement Committee, Veterinary Committee, Stock Prizes Committee, General Committee, Show-yard Contracts Committee, and Education Committee, were appointed.

STANDING COMMITTEES FOR 1868.

Finance Committee.—Major-General the Hon. A. Nelson Hood, Chairman; Mr. Barnett, Mr. Bramston, Colonel Kingscote, M.P.; Mr. Randall, Mr. Torr.

Horse Committee.—The President, Chairman of Finance Committee, Lord Chesham, Mr. Bramston, Colonel Challoner, Mr. Brandreth Gibbs, Mr. Torr.

Journal Committee.—Mr. Thompson, Chairman; Earl Cathcart, Vice-Chairman; The Right Hon. the Speaker, Sir J. V. B. Johnstone, Bart., M.P.; Sir E. C. Kerrison, Bart.; Mr. Acland, M.P.; Mr. Dent, M.P.; Mr. Holland, M.P.; Mr. Wren Hoskyns, Mr. Milward, Mr. Wallis, Mr. Jacob Wilson.

Chemical Committee.—Mr. Hawes, Chairman; Earl Cathcart, Lord Vernon, Sir J. V. B. Johnstone, Bart., M.P.; Sir E. C. Kerrison, Bart.; Sir Massey Lopes, Bart., M.P.; Sir H. Vane, Bart.; Mr. Davies, Mr. Dent, M.P.; Mr. Holland, M.P.; Mr. Wren Hoskyns, Ven. Archdeacon Huxtable, Mr. Thompson, Mr. Wells, Mr. Jacob Wilson.

Veterinary Committee.—Major-General the Hon. A. Nelson Hood, Chairman; Hon. H. Liddell, M.P.; Sir J. V. B. Johnstone, Bart., M.P.; Sir H. Vane, Bart.; Colonel Challoner, Mr. Dent, M.P.; Mr. Brandreth Gibbs, Mr. Pain, Professor Simonds, Professor Spooner, Professor Varnell, Mr. Wells, Mr. Jacob Wilson.

Stock Prizes Committee.—Lord Chesham, Lord Walsingham, Major-General the Hon. A. Nelson Hood, Hon. H. Liddell, M.P.; Sir J. Trollope, Bart., M.P.; Mr. Baldwin, Mr. Barnett, Mr. Barthropp, Mr. Bowly, Mr. Clayden, Mr. Davies, Mr. Dent, M.P.; Mr. Druce, Mr. Brandreth Gibbs, Mr. Hassall, Mr. Holland, M.P.; Mr. Jonas, Mr. Milward, Mr. Randall, Mr. Rigden, Mr. Sanday, Mr. Robert Smith, Mr. Torr, Mr. Turner, Mr. Wallis, Mr. Webb, Mr. Jacob Wilson, and the Stewards of Live Stock.

Implement Committee.—Colonel Challoner, Chairman; Earl Cathcart, Lord Vernon, Major-General the Hon. A. Nelson Hood, Sir E. C. Kerrison, Bart.; Sir A. K. Macdonald, Bart.; Mr. Amos, Mr. Cantrell, Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P.; Mr. Hornsby, Mr. Wren Hoskyns, Mr. Randall, Mr. Read, M.P.; Mr. Sanday, Mr. Shuttleworth, Mr. Thompson, Mr. Torr, Mr. Wallis, Professor Wilson, Mr. Jacob Wilson, and the Stewards of Implements.

General Leicester Committee.—Mr. Thompson, Chairman; Duke of Rutland, Earl of Powis, Lord Chesham, Lord Portman, Lord Tredegar, Lord Vernon, Major-General the Hon. A. Nelson Hood, Hon. H. Liddell, M.P.; Sir E. C. Kerrison, Bart.; Right Hon. Sir John Trollope, Bart., M.P.; Sir W. Williams Wynn, Bart., M.P.; Mr. Amos, Mr. Barnett, Mr. Barthropp, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clayden, Mr. Davies, Mr. Dent, M.P.; Mr. Brandreth Gibbs, Mr. Holland, M.P.; Mr. Hornsby, Mr. C. Wren Hoskyns, the Mayor of Leicester, Mr. Milward, Mr. Pain, Mr. Randall, Mr. Read, M.P.; Mr. Sanday, Mr. Shuttleworth, Mr. Stone, Mr. Torr, Mr. Wallis, Mr. Webb, Mr. Wells, Major Wilson, Mr. Thos. Willson, Mr. Jacob Wilson, and the Steward.

Show-Yard Contracts Committee.—Mr. Randall, Chairman; Earl Cathcart, Lord Vernon, Major-General the Hon. A. Nelson Hood, Mr. Amos, Mr. Brandreth Gibbs, Mr. Hornsby, Mr. Milward, Mr. Sanday, Mr. Shuttleworth, Mr. Thompson, Mr. Torr.

Committee of Selection.—Earl Cathcart, Earl of Powis, Lord Walsingham, Right Hon. the Speaker, Major-General the Hon. A. Nelson Hood, Sir J. V. B. Johnstone, Bart., M.P.; Mr. Clayden, Mr. Dent, M.P.; Mr. Druce, Mr. Holland, M.P.; Mr. Milward, Mr. Randall, Mr. Thompson, Mr. Torr, Mr. Wallis, Mr. Wells.

Education Committee.—Earl of Powis, Major-General the Hon. A. Nelson Hood, Mr. Acland, M.P.; Mr. Dent, M.P.; Mr. Frere, Mr. Holland, M.P.; Mr. Wren Hoskyns, Colonel Kingscote, M.P.; Mr. Wells, Professor Wilson, Dr. Voelcker.

Cattle Plague Committee.—The whole Council.

* The President, Trustees, and Vice-Presidents are members *ex officio* of all Committees.

Mr. Shuttleworth having moved that it be an instruction to the Implement Committee to consider the subject of the prize sheets and the arrangements for the new course of implement trials, and that the exhibitors of machinery be invited to send a deputation to meet and con-

fer with the committee upon any changes that may be desirable, the subject was referred to the Implement Committee.

The Live Stock and Implement Prize Sheets for the Leicester meeting were settled at a Special Council, which met by order of the President at the rising of the monthly Council.

The Council have determined to abolish the restriction which has hitherto limited the aged bulls to be under six years old; also the rule which has hitherto prevented an animal that has won a first prize in any class at a previous meeting of the Society from again competing for a similar prize.

The annual meeting of this Society was held at noon on the Wednesday in the Show week, in Hanover Square. The Chair was filled by the President, His Grace the Duke of Richmond. The attendance was very small.

The SECRETARY (Mr. Hall Dare) read the following Report of the Committee: "Since the last General Meeting in May, 1 governor and 97 members have died, and 177 new members have been elected, so that the Society now consists of 78 life governors, 82 annual governors, 1,383 life members, 4,001 annual members, and 16 honorary members, making a total of 5,567. Mr. John Baldwin, of Luddington, Stratford-on-Avon, Warwickshire, has been elected a member of Council in the room of Mr. Pope, deceased. The half-yearly statement of accounts to the 30th of June, 1867, has been examined and approved by the auditors and accountants of the Society, and has been furnished to all members in the last number of the *Journal*. In consequence of the large expenses attendant on the Show at Bury St. Edmunds, and the protracted trials of implements, the Council has been compelled to sell out £2,000 of the funded property, which now stands at £16,027 19s. 7d. in the New Three per Cents., and the cash balance in the hands of the bankers on the 1st instant was £369 8s. 1d. The collection of the arrears of subscription has been steadily progressing; nevertheless, a considerable sum is still due to the Society. It is found that many members cease to pay their subscriptions under the impression that in this way they can terminate their membership; but the Council desire to remind them that by the bye-laws of the Society all members are bound to pay the annual subscription until they shall withdraw by a notice in writing to the Secretary. Notwithstanding the unavoidable absence of cattle, the show-yard at Bury St. Edmunds was well filled with a fine display of horses, sheep, pigs, and poultry, and was remarkable for the most extensive collection of implements and machinery ever brought together. The mayor and corporation of Bury St. Edmunds and the local committee used every exertion to forward the wishes of the Society during the preparations for the meeting and the period of holding it. The Council have purchased an entirely new set of offices and entrances for the show-yard at a cost of £806, which it is hoped will last for many years. They have reason to be satisfied with the new contractor for the show-yard works (Mr. Penny), and have given him the contract for a further term of four years. The Council have settled the live stock and implement prize sheets for the country meeting to be held next year at Leicester, and, with a view of enabling the stock and the men in charge to return home with an absence of only one Sunday, have arranged that the show shall open on Thursday the 16th and close on Tuesday 21st of July. The list of implements for trial will comprise ploughs, cultivators, harrows, clod-crushers, rollers, tile and brick machines, and draining tools: and prizes amounting to £225 will be offered for the best application of steam power to the cultivation of the soil. The sum of £2,595 is offered in prizes for live stock, to which £227 has been added by the Leicestershire and Waltham and the Loughborough Agricultural Societies; and £100 has been offered by the Sparkenhoe Farmers' Club in prizes for cheese. It has been resolved by the Council to apportion England and Wales into eight districts as follows:

- A. Durham, Northumberland, and North and East Ridings of Yorkshire
- B. Cumberland, Lancashire, Westmorland, and West Riding of Yorkshire.

- C. Derbyshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire, Rutlandshire, and Warwickshire.
 D. Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Huntingdonshire, Norfolk, and Suffolk.
 E. Berkshire, Buckinghamshire, Hampshire, Kent, Middlesex, Oxfordshire, Surrey, and Sussex.
 F. Cornwall, Devonshire, Dorsetshire, Somersetshire, and Wiltshire.
 G. Gloucestershire, Herefordshire, Monmouthshire, Worcestershire, and South Wales.
 H. Cheshire, Shropshire, Staffordshire, and North Wales.

The Council have determined that district B, comprising the counties of Cumberland, Lancashire, Westmoreland, and the West Riding of Yorkshire, be selected for the Country Meeting of 1869. During the course of this year alterations have been made in the scheme of Education adopted by the Council: it is no longer connected with the Cambridge and Oxford Middle-Class examinations. The next examination is fixed to take place at the Society's House, in Hanover Square, during the week commencing April 20th, 1868. Forms of entry are prepared, to be duly filled up and returned to the Secretary (together with a certificate of having acquired the elements of general education) on or before the 29th of February next. Any Member of the society may be present at an examination. On this occasion it is not thought advisable to place any limit on the ages of candidates, from the desire to remove every obstacle in the first instance to a candidate coming forward; with the same object in view, an unsuccessful candidate at one examination (unless some reason should intervene beyond mere want of success) will be permitted to compete at a subsequent examination. Every candidate will be required to satisfy the examiners as to his knowledge of the science and practice of agriculture, and likewise as to proficiency in book-keeping, and he must pass an examination either in land-surveying or in mechanics as applied to agriculture: beyond this it is left to his option which one of the following three subjects he will take up, viz., Botany, Geology, or Veterinary Science. Successful candidates are to be placed in two classes, and will stand in order of merit. Certificates (specifying the subject in which a candidate shall have satisfied the examiners) will be granted to successful candidates; and any one obtaining a first-class certificate shall thereby become a Life-Member of the Society: these, with additional prizes, in money or books, constitute the rewards held out to competitors."

Mr. S. SIDNEY said he had been requested to propose the adoption of the report. He did so with very great pleasure, as it showed, considering the difficult circumstances in which the Society had been placed, satisfactory progress in an institution of great importance to the country (Hear, hear). The first paragraph in the report recorded an event which all who knew the gentleman deeply regretted—he meant the death of Mr. Edward Pope, a man who, as a tenant-farmer, wherever he went, whether it were abroad or to the manufacturing districts, or elsewhere, commanded the respect of all who became acquainted with him, and gave them an exceedingly favourable impression of the very important class to which he belonged (Hear, hear). The results at Bury were not quite so satisfactory as those of previous years; but that was not surprising, considering that one of the most interesting features of the Shows, namely, the cattle, were absent. He trusted that the pressure brought to bear upon the Government by the agricultural interest would be sufficiently strong and persistent to prevent them from dropping the measure which they had introduced, and that through the establishment of a market for foreign cattle the country would be secured from a recurrence of the frightful plague with which it had been visited (Hear, hear, and cheers). He saw in the report an allusion to the next country meeting, and to the exhibition of implements. He was glad to have learnt, though it was not referred to in the report, that the Council had seen fit to attend to the representations of practical men, and that they would, before the next show was held, take the opinion of those who were most competent to advise them as to the desirableness of adopting a new mode of conducting the implement trials, so that those trials might really tell the agricultural public something about the value of the implements (Hear, hear). At the present day, when they had among them such a large number of implement-makers and of prac-

tical farmers, it was only by attending to the suggestions of such persons that the Council could give satisfaction to the members, and secure the best kinds of machinery. Another important feature to which he wished to allude was the dividing of the country into new districts. That was very important, for it was well known that to cite what was done in agriculture in a particular county, without reference to its geological formation, was a waste of time, and did not give any correct idea of what the people were about. He perceived that the new arrangement of districts which had been adopted was not merely a geographical, but also a geological arrangement, and in his opinion that would tend to give greater importance to the country meetings than had ever yet attached to them (Hear, hear).

Mr. NEILD, who seconded the motion, observed that Lancashire, which was his own county, contained 146 members of that Society, and was not represented on the Council by a single farmer, though it was represented by his Grace the Duke of Devonshire, who was an ornament to the landed interest. The first thing that struck him in connexion with the report was the fact that the total number of members was only 5,557. He should like to know what proportion that number bore to the list this time last year. In his opinion the number of members was nothing like what it ought to be. The Society was one which should commend itself to every intelligent and enlightened farmer in the country; the publications which he had received, as a member, far exceeded in value the amount of the annual subscription; and in his opinion such an institution, instead of having only between five and six thousand, ought to have at least fifty thousand enrolled members (cheers). He was very much pleased to find that the Council had divided England and Wales into districts. He did not know whether the arrangement was the wisest one that could have been made, but it seemed a very feasible and desirable division. He could not help remarking that if the new districts were specially represented in the Council by members chosen out of those districts, that would, in his opinion, tend to bring before it the interests, requirements, and wants of those districts in an agricultural point of view, and lead to increased sympathy and co-operation on the part of farmers generally in the objects of the Society. This Society was very different to that important one which had been recently formed, called the Chamber of Agriculture. The one devoted itself to the improvement of agriculture and of stock; the other applied itself to what might be called national and parliamentary business.

The SECRETARY said that they numbered 32 members more than at the corresponding period of last year.

The report was then unanimously adopted.

General Hood moved, and Colonel Challoner seconded, the re-election of the auditors, Mr. Astbury, Mr. Corbet, and Mr. Sherborn, and they were accordingly re-elected. A vote of thanks was also accorded to them for their services during the past year.

The routine business having thus been disposed of,

His Grace, in conformity with custom on such occasions, inquired whether any member desired to make any remarks or suggestions.

Mr. ARKELL said he was glad to hear that there were rather more members than there were a year ago. Still it could not be concealed that the Society was almost stationary, and though he had no intention to utter anything offensive towards the Council, he must say that, in his opinion, the cause of that was that they did not keep pace with the times (Hear, hear). In the first place there were one or two gaps requiring to be filled up. They had Dr. Voelcker filling one important post, and Professor Simonds had been very useful in reference to cattle-plague. But there were other diseases to be investigated besides cattle-plague; there were the diseases of plants, and he would instance as seriously affecting his own neighbourhood, the diseases among swedes and common turnips. He thought there should be a Professor of Natural History paid by the Society, to inquire into the origin of diseases in plants, and to ascertain whether they were caused by blight, mildew, or insects. Though it was natural to regret that £3,000 had been taken from the accumulated funds during the past year, he must remark that the possession of a very large balance made the Council rather too independent of their constituents. He could not see any great advantage in a large balance in the

case of a society for the promotion of the interests of agriculture, while on the other hand there were many ways in which money might be spent so as to increase the produce of the country. The disease in turnips and swedes, to which he had alluded, existed to a considerable extent in the West of England. It had done a great deal of mischief in his own county of Wilt; but he had also seen it in Gloucestershire, on the Cotswold Hills, and elsewhere. He had been engaged in farming for about thirty years, and at that period they never scarcely heard of any disease in mangold. Of late years there had been an insect winding itself between the leaves of the plant, and it was not the old turnip-fly, or anything like the turnip-fly, in the swede. It appeared to him that in the case of all foreign plants introduced into this country there was some sort of counteracting influence checking production, whether it arose from the soil, from blight, or from insects, which required to be watched by a scientific man, who ought, in his opinion, to be paid for his services by that society. In his neighbourhood they had had some very bad swedes this year, and the disease was not finger-and-toe, but what was called "curl" in the leaf. A gentleman from London, who walked over his farm, attributed it to the use of artificial manure; but he (Mr. Arkell) did not concur in that opinion. He had sometimes found a sort of chrysalis or grub in the centre. On minute examination it was found that the seed-stalk was dead, and that appeared to affect the whole of the plant. Sometimes he could not find the grub, but nevertheless the plant went into curl, and growth was quite stopped. On looking over the articles in the commencement of the *Journal*, he found some written by a gentleman named Curtis, upon that subject. He did not know whether Mr. Curtis was alive or dead. [THE SECRETARY: Dead.] Since 1843 or 1843 nothing had been said in the *Journal* about these diseases, and he had supposed the reason to be either that Mr. Curtis was dead or that the Council was asleep (laughter). Mr. Arkell concluded by referring to two articles relating to this subject, which, he said, appeared in the *Agricultural Gazette* of the 7th of last September, appealing to the Council, or its representatives in the room, whether they had read them, and contending that, at all events, they ought to have done so.

Mr. SIDNEY desired once more to call the attention of the Council to the importance of undertaking an agricultural survey of England and Wales. Of course he could not expect the Council to take up the work offhand, and without giving it due consideration; but he had no doubt that a day would arrive, and that not distant, when some President of the Society would gain a just reputation by advocating the institution of such a survey. It was 30 years since the Society was first established, yet he defied any one to point out a single book or essay which would give an adequate idea of the improvement made in the agriculture of England since the day the Society was founded to the present moment (Hear, hear). They were told that they only numbered 5,000 members, but surely among 5,000 men of the classes who constituted the Royal Agricultural Society they had a sufficient proportion of practical men—tenant-farmers and others—to return intelligible answers to plain and intelligible questions on this interesting subject (Hear, hear). He would suggest, therefore, that the Council should divide itself into committees—one for the chemical department of the inquiry, assisted by Dr. Voelcker; and another the veterinary department, aided by Professor Simonds. The necessary questions with regard to live-stock, and the necessary questions as to cultivation, might then be prepared and forwarded by the most eminent breeders of stock and cultivators of the soil throughout England and Wales, with a request that they would fill in the answers to the questions, and return the forms so completed to the Council. The questions would go to this point: What they were doing now, and what they were doing thirty years ago; and the replies to these queries would afford a valuable mass of information, of which the Society hardly possessed a shred at this moment. It might be objected that this would be an expensive process; but even if it were so, and they found themselves obliged to sell out a further portion of their invested capital, the result would be to place the Society in a still higher position than it had ever before occupied in carrying out its motto of "Practice with Science" (applause). He did not believe, however, that any serious expense would be entailed; for, in the first place, the questions might be forwarded with

the *Journal*, through the book post, and thus at any rate the expense of posting them to 5,000 persons would be saved (Hear, hear). The next objection might be that they would not get all the questions answered, and he dared say they would not. Still, they would get a sufficient number of answers to supply an amount of useful information that they did not enjoy at present (Hear). The Society's *Journal* no doubt contained many useful and valuable papers; but he had never yet seen a work with so large an assured circulation that was so little read (Hear, hear, and laughter). True, the suggestion he had thrown out had the other day been partly acted upon; but it was not referred to in the report, although nothing had ever been done which reflected so much credit upon the Society. The Council appointed a roving commission to inquire and report upon steam cultivation. That commission was formed in an admirable manner, and composed of thoroughly practical men. Its inquiries embraced the whole subject; and whenever, as was frequently the case, he was applied to for information with regard to steam cultivation, his reply was, "Go and get the *Journal* of the Society, which contains the commissioners' report. You will find all the information you require there." Another portion of his suggestion was this: Having formed their committees and framed the questions to which they desired answers, they should next divide the country into districts according to its cultivable properties; the mountainous and hilly regions forming separate groups. Then look out the most intelligent men in those districts to answer the questions, and upon receiving their replies place them in the hands of a competent person to form the groundwork of a report upon the present condition of agriculture. By this means they would do more to extend the numbers of the Society and to add to its influence than by anything else they could do.

Col. CHALLONER wished to remind Mr. Sidney that the Council had not altogether overlooked this subject, and the prizes given by the Society had drawn forth much information respecting the state of agriculture in the different counties. He should be sorry if it went forth that the Council had been inattentive on that point.

Mr. SIDNEY observed that he altogether objected to the system of giving prizes for essays, as it had produced scarcely anything but rubbish (No, no). He had written a prize essay himself, and he knew how such things were got up (laughter). He did not want professional essays—he did not want essays which were written for five or ten guineas, but he wanted the information of men who really understood the matter. Some of the essays to which Col. Challoner alluded were five-and-twenty years old, whereas what he (Mr. Sidney) desired was a simultaneous and complete view of agriculture as it stood at the present moment. If the Society went on giving prizes, very little good would result.

Mr. C. S. READ, M.P., said, as a young member of a very sleepy Council (laughter), he could assure Mr. Arkell that the Council had cause to complain of apathy and indifference on the part of members of that Society. There they had in that room what number of members? About 50 out of 5,000 (Hear, hear). If Mr. Arkell and other gentlemen would lend the Council their assistance by suggesting subjects for prize essays, the suggestions would be received with thankfulness, and might be productive of a great deal of good. He could not doubt that what had been said with respect to curl in the turnip would receive the attention of the Committee. As regarded the disease in mangold to which Mr. Arkell alluded, he (Mr. Read) might remark that if that gentleman turned to the papers of Mr. Curtis, he would find that disease minutely described. He would also see a remedy suggested; but, unfortunately, remedies of that kind were not always practicable. If he remembered rightly, the remedy suggested in that case was that farmers should employ a number of women and children to go round their fields and pinch these unfortunate magots (laughter); but as they were now deprived to a great extent of that kind of labour, of course the suggestion could not be carried out.

Major-General HOON had no doubt the Council would feel much obliged to Mr. Sidney for his suggestions; but he would remind the meeting that the essays relating to the agriculture of the several counties were nearly completed, and it would be for the Council to consider the advisability of proceeding farther. The country had been divided into districts. It was divided into ten districts, and the Society used to go into one

of them every year. It had now been divided more geologically, and therefore, as he thought, more scientifically, into eight districts, and it would be for the Council to consider whether a certain amount should be voted annually for a special report, each district being reported upon separately. As regarded the finances of the Society, he begged to say, as chairman of the Finance Committee, that he was sorry they were obliged to recommend the Council to withdraw £2,000 for Bury. But he always foresaw that that would be the result if the Society determined to go to a small town. Nevertheless, it must always be recollected that they should not think too much of money (Hear, hear), and must go where it was considered best for agriculture that it should go (Hear, hear). He hoped that the funds of the Society would be re-imbursed by the visit to Lancashire.

Mr. WARRY thought that it was not only desirable that the necessary knowledge should be conveyed in the pages of the various publications, but that it should be brought home to the experience of farmers, so that practical effects might result.

The CHAIRMAN said there did not seem to be any practical question placed before the meeting by Mr. Arkell, but he thought he might say, on behalf of the Council, that they were anxious at all times to receive suggestions from members of the society; they were most ready to pay attention to suggestions coming from practical men, and if possible to arrive at a useful result. There was one thing mentioned by Mr. Sidney which he feared the Council, however active they might be, would find quite beyond their power; he did not see how they were to compel people to read the *Journal* (laughter). By Mr. Sidney's own admission the *Journal* was a very well-conducted periodical, and was written with great ability and skill; but that gentleman's complaint was that information was offered by that society, but persons would not read it. Well, if this was the case—and he did not question Mr. Sidney's assertion—he must say that was the fault of the public outside, and not of the Council inside.

Mr. SIDNEY observed that that was not his assertion.

The CHAIRMAN continued: He had understood Mr. Sidney to say that the public did not read the *Journal*. The gentleman who commenced the discussion, Mr. Arkell, suggested that there should be professorships established by that Society to deal with various diseases in roots and grain crops of all descriptions; and he also took the Council to task for not having read, as he supposed, two leading articles which were published on the 7th of September in the present year, and which dealt, he said, with the subject of the curl of the leaf in the turnip.

Mr. ARKELL observed that what he spoke of was the necessity of inquiring into the diseases of plants.

The CHAIRMAN said his complaint was that Mr. Arkell himself did not read the pages of the Society's *Journal*; for, had he looked at the general index to the *Journal*, extending from volume i. to vol. xxv., he would have found an enormous number of articles relating to such diseases as he had mentioned.

Mr. ARKELL remarked that those articles only went up to 1843—he could not find anything later—and they did not treat of the particular disease to which he alluded.

The CHAIRMAN, after referring to the *Journal*, said he found that the subject was treated in 1865, only two years ago (Hear, hear). If gentlemen would take the trouble to examine they would find various treatises on the diseases of turnips. Under these circumstances it was, he thought, rather hard that the complaint should be made against the members of the Council that they had not read the two newspaper articles which appeared in September last. He was quite sure, however, that the more suggestions were made by practical men like Mr. Arkell, the better pleased the Council would be, and the better it would be for the public generally. It was only from practical quarters, from gentlemen who were engaged in farming, that the Council could ascertain what was really wanted; and it was of course very desirable that the diseases of cattle and plants should be discussed at such meetings as that. At the same time he did not think they were quite so deficient in knowledge on those subjects as Mr. Arkell's remarks would lead any one to suppose. He admitted the value of Mr. Sidney's suggestions as to getting the country better divided, with the view of obtaining reports from different districts. But he must remind that gentleman that

on no subject was there so much difference of opinion among practical farmers as on that of agricultural statistics (Hear, hear). For his own part he thought there was undue apprehension on the part of men who did not go sufficiently deep into that question, or who did not look far enough before them. He thought that agricultural statistics would be very valuable. In connection with the office in the Government which he had now the honour to preside over, he had endeavoured last year and this year to secure something like a collection of statistics. Of course the thing was only permissive, and therefore they could not expect to obtain exact information; but if agriculturists generally were thus led to inquire and to value statistics, they would probably be led to assist more readily than they had done hitherto. There existed a strong feeling, an ignorant feeling as he thought, in many quarters, in reference to the collection of statistics; and it was only by degrees that prejudice could be removed, and an object secured which he believed would confer benefit on farmers as well as on the public generally. He would only add that he had been endeavouring to draw up some papers with the view of securing returns, and that he hoped he should meet with the support of farmers generally; for he was quite sure that unless they did support him it would be perfectly useless to attempt to collect statistics.

Mr. ARKELL wished to state his belief that the disease to which he had referred was different from that which had been treated by Mr. Curtis. He believed it was a fresh disease which had sprung up within the last few years.

Mr. WILLSON (Leicester), after suggesting that at future country meetings the meeting of members should be held early in the week, in order to ensure a better attendance, said he believed the unwillingness to make returns was in a great degree owing to the refusal of the Government to deal with foreign stock, and he believed that no returns would be made unless the Bill that had been introduced dealt with that question in a fair spirit. He did not, he might add, consider that the papers sent out by the Lords of the Privy Council were in the best form for the purpose.

Mr. A. PELL said he rose to move a vote of thanks to their noble Chairman (cheers). He need say very little on that subject, his Grace's name and that of his family being entirely and thoroughly associated with the welfare and progress of agriculture (cheers). The noble duke and his immediate predecessor were indeed so successful in that department that he was quite sure that, even if that were the commencement of his Grace's term of office instead of the middle, the proposal would be received with the utmost cordiality. But his Grace had added to his other antecedents that of having completed a large portion of his term of office in the most satisfactory manner (cheers). He wished to make one remark in reference to the subject of essays. At Bury he ventured himself to suggest to Mr. Frere one subject, which he now noticed included in the list of prizes, and although the essay would not go quite as far as he could have wished, the question might hereafter be worked out in detail. The subject which he suggested was that of the social condition of the labourers; he saw that Mr. Frere had confined it to their food. He hoped that essays of that nature would be continued, and embrace the inquiry how labourers lived, which to him was to a certain extent a mystery (Hear, hear). He did not mean to say that labourers in the country did not live comfortably, and more comfortably than persons of the same class in towns, and that their latter days were not quite as peaceable. He thought that the investigation should include buildings, so that there might be greater conformity with the best principles relating to sanitary arrangements.

Col. CHALLONER said, as one of the oldest members of the Council, he felt great pleasure in seconding the motion; and he would remark that, notwithstanding his Grace's official duties as a member of the Cabinet, he did not believe there was a single instance in which he had failed to take the chair at a Council meeting since he had become President (cheers).

The motion having been carried by acclamation,

The CHAIRMAN, in returning thanks, said the gentleman who proposed the vote of thanks truly observed that he and his family had been connected for a long time with agriculture. He added that they had been most successful. On the present occasion that was an unfortunate remark (laughter), because it happened that that was the first time for very many years that

his father or himself had not taken one of the prizes at the Smithfield Show. He would not enter into the merits or demerits of that exhibition, which he would probably in a few hours have to descend upon in the neighbourhood of Fleet-street. He could not help saying that one remark of a gentleman who had just spoken bore out what he (the Chairman) had said with regard to the difficulty of collecting agricultural statistics. That gentleman said in effect that farmers would not aid the Government in the collection of statistics, unless foreign cattle were slaughtered at the ports. Now, he could not conceive two things less connected with each other (Hear, hear). Why they were not to get one thing done if they could not get another thing done, which had nothing to do with it, he could not understand (Hear, hear). Such conduct appeared to him very short-sighted. He recollected hearing an intelligent practical farmer say, some years ago, at a meeting of a Board of Guardians that, he was not going to fill up returns, because the Government would not repeal the malt-tax (laughter). He had great hopes, however, that the

bill of the Government relating to foreign cattle would be passed. (A MEMBER: It is not printed.) It was not customary to print bills on the first reading; but that measure had been read a first time, and he hoped it would meet the difficulties which the gentleman to whom he alluded seemed to labour under (laughter). He hoped it would provide for the slaughtering of animals (Hear, hear) at the ports (Hear, hear), for without that they could not be satisfied (cheers). He was now speaking not as a member of the Cabinet, but as a large flockmaster. He hoped that sheep would be slaughtered at the ports. He should be very sorry if the disease were imported into this country, which would be a very serious evil to flockmasters and to agriculturists generally, who dealt much in sheep (Hear, hear). He would not detain them further; but he thanked them most cordially for the honour they had done him, and he could state that the time which he had devoted to the business of that Society had been to him a source of great pleasure (cheers).

The meeting then separated.

THE SMITHFIELD CLUB CATTLE SHOW,

AT THE AGRICULTURAL HALL, ISLINGTON.

THE BIRD'S EYE VIEW.

It is satisfactory to hear that the Director of the Show sees no reason why the members of the Club should not be admitted to the body of the Hall during the time the Judges are engaged in making the awards; while gentlemen like Mr. Henry Overman, and Mr. Charles Howard, who have acted as Stewards and Judges, consider that the few visitors who come in on the Monday morning might be passed downstairs with far less practical inconvenience than attends the system of public judging at other shows. People might be kept quite as clear of the authorities in the now empty avenues; and when it is remembered how little the members of the Smithfield Club get in return for their subscriptions, we do trust that this boon will be conceded. No man has done more to go with the times and get quit of little special restrictions and observances than the General, and we believe that if he had been personally consulted he would not have raised his voice against his brother-members, sharing the promenade and the opportunity for a fair inspection of the animals with their Royal Highnesses Prince Christian and Prince Leopold, who accompanied the gallant President on his rounds.

It is impossible to say much of the meeting from above, saving as to the beasts we have already met elsewhere. From a bird's-eye view, however, the show would seem to be somewhat better than might have been expected, although certainly not more than an average one, if even that. There is not an extraordinary beast in the Hall, beyond Mr. McCombie's ox, and his excellence depends far more upon his size and weight than particular grandeur or nobility of character. A number of the Birmingham cattle have been brought on, with, more especially in the Shorthorn classes, some remarkable revisions of the decrees arrived at in the Midlands.

The Devons are by no means so numerous as last year, nor do they appear to run up so closely for the Cups as they then did. Rather noticeably Her Majesty is first in the first class on the first time off her making an entry in her own name at the Smithfield Club; while Mr. Smith, from Exeter, takes off the chief honours of the next two lots. His three-year-old steer was the best Devon at Birmingham: when we spoke to him as a clever, deep beast; but the best in

the old class has never previously been exhibited. The breeding of almost all these three steers is good, and several commendations were added to the actual awards. Mr. Farthing's Devon cow was also the best of her age at Birmingham, as was also the best heifer.

The Herefords were in more force, although with a deal of the previous week's doings in the return. Mr. Hill's young steer, third at Birmingham, was first here; Mr. Beach's steer, second at Birmingham, first here; and Mr. Cock's, first at Birmingham, third. At Bingley Hall these three were in the same class, but at Islington Mr. Hill goes into a younger class. Mr. Beach's prize ox, also first, was not exhibited at Birmingham, where Mr. Pitt's now second was passed over altogether without notice, and Mr. Jones' second was here third. The first and second heifers occupied precisely the same places as heretofore, but Mr. Baldwin's Venus has not been sent on for the sacrifice; and the third cow at Birmingham is consequently second to Mr. Bettridge's first—one, in fact, being a very close reading to the other.

The Shorthorn oxen are better here, if neither Mr. Heath's nor Mr. George Taylor's first-prize beasts be amongst them; and with the Bridlington steer well out of the way in the North, Mr. Foljambe succeeds to the highest honours. It is in the oldest class and best filled of the steers that we shall look for the best, where Mr. Rowland Wood's white gets only third to the Duke of Beaufort and Lord Penrhyn, neither of which he had previously encountered. Amongst the heifers Lord Feversham again loses a step; while the Shorthorn cows are turned and turned about in the most extraordinary manner. The best at Birmingham is nowhere here, and the best at Islington was merely commended in Birmingham! although the second is again second—in the original return said to be third—and Lady Selina Spencer, and a number of other highly-bred animals, passed over. Mr. Torr, one of the Judges of Shorthorns, not long since cut his toe clean off when trimming a hedge, but he stuck very gamely to his work.

The Sussex, bred and fed by Messrs. Heasman, fulfils his promise as a rare good one at most points, and the few Welsh Cattle have never been better. The Duke of Sutherland is first again for West Highlanders

with his Birmingham Ox, and Mr. M'Combie, of course, with the now Royal Polled Beast, which has been on a visit to her Majesty, but the competition was very limited.

The sheep make up a very uneven show, where the longwools have all the worst of it. Lord Berners retains his lead with the Leicesters; the Cotswolds only run to an entry of four, nor are the Lincolns much larger, if better represented. Lord Walsingham's beautifully-prepared wethers take two first amongst the Southdowns; but Lord Braybroke just comes in for one first, with some really-good competition, in the three classes; the judges, indeed, appearing frequently to be in a difficulty amongst themselves. Many of the Shropshires came on, and Mr. Nock's handsome pen was again the best of the breed; as the Oxfordshires did more than fulfil their promise of the previous week. There was not a bad pen amongst them, with Messrs. Druce, Newton, Overman, Treadwell, Alfred Rogers, Street, the Duke of Marlborough, and Stillgoe as the exhibitors.

The show of pigs was short; but Mr. Moore assured us that they never had so excellent a pen as the Gold Medal one of this year; and the Messrs. Howard may well be content with a second in such a class. The names of Mr. Coate, of Hammoon, and Mr. Melville Cartwright have also long been famous for pig-breeding; so that, at any rate, the other classes open well, with Her Majesty, Mr. Stearn, and others in support. It is only right to say that in two of the other classes two of the best Colleshills were wanting, one having met with an accident, and another fairly killed himself with rage.

[FROM OUR OWN CORRESPONDENT.]

Conspicuous amongst the Devon steers not exceeding 2 years and 6 months is Her Majesty's first-prize steer, a very pretty compact animal, not of large frame, but well formed and evenly fed throughout, with a beautiful curly coat, a deep full chest, legs rather short, quality of flesh very good. Mr. Buller's second-prize steer has a larger and longer frame, his hind quarter and twist narrow, quality of flesh excellent. With the Devon steers not exceeding 3 years and 8 months Mr. W. Smith, of Higher Hoopern, wins first prize with a beautiful steer. His top is very level and fat, and whole frame complete and full, in good cylindrical proportion, and quality of meat superior. Mr. Jno. Overman, Burnham Sutton, takes second honours in this class with a very compact steer, well made up in every respect, and Mr. W. Taylor, Glenley, Sussex, third prize. This steer is slightly uneven in his fattening, but his quality excellent. Mr. Farthing's and Mr. Frampton's steers very properly receive high commendation. Her Majesty is again a competitor in this class with a very useful steer, having a good loin and back. He is sold to Copeland, and the ticket at his head states that he is destined to provide the Court with the Royal baron of beef. Probably this *baron* must be for the Royal table alone, and the baron from Mr. M'Combie's enormous ox, which is also to go to Windsor, must be for a lower table. Amongst the Devon steers or oxen above 3 years and 8 months old, Mr. Smith again takes first prize with a very deeply-formed animal of full proportions but not long frame, his purse capital, and of excellent quality of flesh—a good butcher's animal. Mr. W. Farthing takes second prize with a very thickly-framed ox, very fat, but somewhat loose in quality. Mr. J. J. Farquharson's is a fine, well made animal, which takes third prize. For Devon heifers, not exceeding 4 years old, Mr. R. Burton, Broadclyst, takes first prize with a very hand-

some heifer, of almost perfect cylindrical frame, of excellent quality. Mr. Barrington, Thorley, takes second prize with one rather patchy in her fattening, loin rather high, good quality. Her Majesty gains the third honours, and Mr. Smith, Higher Hoopern, a high commendation. Devon cows, above 4 years old, make up a good class, containing some superior animals. Mr. Farthing, Stowey Court, takes first place. This is a short-legged capital cow, with great rotundity of frame, beautifully got up. She is very deep in form, but not long, her tuts proportionately large—a very good cow. Mr. Coate, Hammoon, takes second prize. This is a much larger cow, with a capital rump and twist. Mr. Taylor, Glenley, takes third place; she is capital in her girth, with a good back and loin, but rather small in size. Mr. Farthing, Farrington, receives a high commendation for a large good cow with a good quarter.

In the Hereford Steers not exceeding 2 years and 6 months, Mr. Hill, Orleton Court, takes first prize with a fairish steer, deep in form, with a good capital back, short legs, quality first-rate. Mr. Tudge takes second prize with a much longer steer, but not so good in form. J. H. Arkright, Hampton Court, receives a high commendation. In Steers not exceeding 3 years and 3 months old, Mr. Beach, Dudley, is the first for a coarse steer, rather long in frame, and ribs rather flat; he has a good rump. Her Majesty takes second honours with an animal whose rump is rather scant. Mr. Cook, Twyford, takes third prize for one with a capital back and rump. Mr. Bettridge has a high commendation, and Colonel Lindsay a commendation. With Hereford Steers above 3 years and 3 months old, Mr. J. Beach, Dudley, is again first: this is a capital ox; he is very deep through his chest, capital breast, end, and deep bosom; hips wide; back rather uneven; rump short; purse and twist good. Mr. G. Pitt, Radnor Court, takes second honour with a very moderate ox at most points, and very flat and bad forward. Mr. Jones, Springfield, is third with his Birmingham ox; Mr. Turner, The Leen, receives a high commendation with a well-formed heavy ox; Earl Darnley a commendation; and Mr. Loyd a high commendation for perhaps the best ox in the class, where the judging was very open to discussion. In Hereford Heifers not exceeding 4 years old, Mr. Bettridge, East Hannay, takes first honour with his Birmingham heifer: good almost everywhere but behind, where she finishes unparadoxically bad. Mr. J. H. Arkright, Hampton Court, takes second prize, with a low but capital formed and well-fatted heifer; as also second at Birmingham. Her Majesty again takes honours with a heifer highly worthy the distinction. Mr. James, Mappowder Court, receives a high commendation with a useful animal; rather loose hand. With Hereford Cows above 4 years old, Mr. H. Bettridge is again to the fore with his good cow, which took first honours at Birmingham: she is not noble-looking, but her points are very remarkable—great depth of frame throughout, girth extraordinary; such a back, rump, and tuts are seldom seen, but her feeding is not uniformly even, though it is thickly appropriated over her frame; she appears small in her general contour, but proportionate and deeply cylindrical. Mr. Corbet Groves, Berrington, takes second prize with a good well-made cow and fat, the third at Birmingham; while Mr. James has third prize with a very superior cow, in good form. The real contest for the Cow Cup lay between Mr. Bettridge's Hereford heifer, Mr. Stratton's Shorthorn heifer, and Mr. Dugdale's Shorthorn cow.

In Shorthorn Steers not exceeding 2 years and 6 months, the Duke of Sutherland wins first prize with a very nice steer at 2 years 1 month 5 days old. He possesses good depth of frame, and he has a mild ox-head, short neck, deep shoulder unusually wide or thrown

eat, very full breast, chine exceeding good, ribs capitally springing, loin wide and fat, hips and rump rather narrow in proportion; deep thighs, heavy flank, very good purse, and twist full and good; quality of flesh rather loose; while he lacks grandeur. Still he denotes perfect breeding, and is descended from Colonel Townley's Royal Butterfly. The Earl of Aylesford takes second prize with a moderate steer. The Rev. H. H. Beevor shows a 'superior steer, for which he receives a high commendation. For steers not exceeding 8 years and 3 months old, the first prize is won by Mr. J. S. Poljambe with his Birmingham beast, a very good one in places. He has a good outline, a handsome head, good neck and shoulder; his breast, rump, and tuts a little defective; his briкет, flank, and underneath parts not good. He stands badly, as his hocks nearly meet. His pedigree perhaps is not equalled by any animal in the Hall, going back to the Chilton herd of Mr. Mason, thence to Collins, &c., a pedigree of 100 years; and he was said to be the second-best beast in the show. The Earl of Aylesford again takes second prize with a very fat steer, but not so level or evenly fed; has a heavy frame, but thighs and flank rather light. In this class Mr. Stratton takes third prize, Messrs. Lenny and Son a high commendation, and Sir W. C. de Brooke a commendation. Amongst steers above 3 years and 3 months old, the Duke of Beaufort takes first prize with a beast well covered on his top, but with his neck bare, looks not good, flank thin, bottom thigh light, purse good, hand loose. Lord Penrhyn takes second honour with a very heavy grand ox; capital broad chine and shoulder, breast exceedingly good, level well-covered back, ribs springing well; his underneath parts are rather light, and he is somewhat high, but altogether a noble ox of excellent quality. Mr. Rowland Wood takes third prize here with the same ox that took second prize at Birmingham. This is an exceedingly stylish animal. He has fed slightly uneven, but is firm in hand; his frame is long, deep, full, and very proportionate—the pattern of a good shorthorn. Mr. T. Pulver receives a high commendation with a good noticeable ox; but Mr. J. Coleman's ox is the heaviest in the class, and although somewhat high in the chine, his flesh is so firm that, had a butcher been one of the judges, he would have been commended. Mr. T. B. Dring shows an ox, but not so evenly fed as to obtain honours, although he has been tried upon malt! This is the best class of the shorthorns, but no animal in it beyond Mr. Wood's steer, which has been out too often, is superlatively good, while the judging was generally considered to be very bad, at least as regarded the award of the first prize. In Shorthorn Heifers not exceeding 4 years old Mr. Stratton wins first prize with his very prettily-formed heifer, 3 years 2 months 1 week old, which has a very good hind-quarter, hips nicely formed and well covered, flank rather scant, back rather low, and her shoulder defective, loin not superior, very handsome looks, and quality exceedingly good. The judges had a long discussion between the many merits of this heifer and the silver-cup Hereford heifer. Lord Petersham's second-prize heifer, which was first at Birmingham, has a common head, but she is otherwise a thick good heifer, much heavier than the other, and her quality of flesh excellent. The third prize goes to the Earl of Hardwicke for nothing very noticeable, and Mr. Seymour receives a high commendation for a heifer with a slack loin and thin neck. Mr. J. Walter, Bearswood, has also a commendation, but the Prince of Wales is an unsuccessful exhibitor in this class. For Shorthorn Cows above four years old Mr. A. Dugdale, Rose-hill, Burnley, gains first prize with an animal only commended at Birmingham, where she was beaten by the Duke of Sutherland's cow. She has a good shoulder, but breast-girth not good, capital hindquarter, very broad but not disproportionate hips,

level back, neck thin and light underneath parts, with her general form not prepossessing. Mr. R. Taylor, Hazelsleigh Hall, Maldon, takes second prize with his good useful cow, of no great style or quality. Mr. F. Mead, Wilstone, takes third prize with a very compactly-formed cow, of no particular breeding, having been bought for a trifle in Aylesbury Market. The Duke of Sutherland's first-prize Birmingham cow only comes in for a high commendation; why she does not stand higher it is difficult to say. She has an extraordinarily deep compact frame, and is very evenly fed, with her girth great, and general contour level and uniform, while she is short on her leg and as pretty as a picture. Mr. W. E. Master, Sutton Potton, shows a handsome cow of good quality and proportions. Mr. C. Hobbs, Maisey, shows a good cow with preposterous hips and tuts, and Mr. Stratton's commended cow is an especially neat one. Her Majesty is an unsuccessful exhibitor in this class, as is Mr. Charles Howard with a famous old cow, at least in the herd.

Amongst the Sussex Steers or Oxen not exceeding 8 years old, Mr. G. C. Coote, Tortington, takes first honours. This is a nice steer, in good form, neck rather light, and girth not great. Messrs. J. and A. Heaman, Angmering, take second prize with a larger animal, but not in such complete form. Amongst Sussex Steers above 8 years old Messrs. J. and A. Heaman take first prize with the ox of which so much has been said, and that fully maintains his fame. He is a really prime ox, of very superior quality, and beautifully fed; all is rounding and evenly turned. His loin and back are very good, and he is of great girth. His twist and flank are excellent, but he stands a little tenderly behind. The judges placed him as the third best beast in the Hall, but we should certainly have put him as second only to the Scot. Mr. Botting, Westmeston Place, takes second prize with a superior ox, in nice form, but not evenly fed; quality very good. Mr. G. C. Coote, Tortington, takes third prize. We did not especially note him. This was a good class of the Sussex breed, but "with Eclipse first and the rest nowhere." Amongst Sussex Heifers not exceeding 4 years old, Mr. J. Shoesmith, Berwick, Lewes, takes first honours with a somewhat narrow-framed animal, not in the best form; quality good. There are only four animals in this class, but they all receive some distinction. With Sussex Cows above 4 years old, Mr. G. C. Coote is again successful. His cow is a truly good one for any breed. The same well-rounded "points," but ribs not sufficiently sprung. Mr. T. Smith, Knell Beckley, takes second prize with a fair cow, not in uniform proportion.

The Norfolk and Suffolk Polled Steers or Oxen of any age always make out meagre classes, both in filling up and general excellence. This year we have some fair specimens of the breed. Mr. J. Sewell, North Pickenham, takes the second prize with a tolerable specimen, but not good enough for the first honour, and he has no competitor. In Norfolk or Suffolk Polled Heifers or Cows, Mr. W. M. Bond wins first prize with a truly good and compactly framed heifer; with every "point" so rounded and smooth we can only say she is worthy of her prize and the distinction of being brought out amongst the selected ten for the gold medal. Mr. Postle's, Smallburgh Hall, second-prize heifer did not claim our attention, being small.

From Long-horned Steers or Oxen of any age, Mr. W. T. Cox, Spondon Hall, Derby, takes the prize with a well-fed fair-framed animal. Sir J. H. Crewe, we thought, showed a better animal in many respects, but this was not commended. With Long-horned Heifers or Cows of any age, Mr. W. T. Cox is again successful, taking the only prize. The class is only just passable, but it still represents a very important breed for many useful and profitable purposes.

In the Scotch horned Steers or Oxen of any age, the Duke of Sutherland, Dunrobin Castle, wins the first honour with a very superior Highlander, of deep, compact frame, in exceedingly good form; very fat, but not firm in hand; while Lord Derby takes second honours with a steer deep in form, but which has fattened unevenly. Captain Gunter, of The Grange, Wetherby, more celebrated for Shorthorns than Scotch-horns, walks over with a very nice compact little Highland heifer, well and evenly fattened, and of capital quality.

In the Scotch polled Steers or Oxen of any age, Mr. William M'Combie, of Tillyfour, exhibits his now famous 4 years and 8 months old beast, the best animal of the year both at Birmingham and at Islington. He is certainly a wonderful animal, of colossal size and proportions, but not equal to the Cup ox exhibited by Mr. Heath Harris, also from the North. He has travelled much, which has no doubt rendered his hand rather loose; this was not the case with Mr. Harris' ox. He is neither handsome nor noble in his appearance, but almost of unequal substance, rather irregularly compacted. The thickness of flesh on his great rotund frame is astonishing, but it is not laid on evenly; when in his unfattened state he would appear as an overgrown raw or rough steer; his fattening covers all his defects, and he now appears as an enormous mass of living flesh and bone, without any symmetry or pleasing features: a true monster of obesity, and a type for the country service. To describe his *points* is wholly superfluous; he must be seen; he scarcely looks like a domestic animal destined for family consumption. He was a visitor at Windsor last week, whither he went for the express purpose of Her Majesty's inspection, and who declined him as a gift, but a royal baron of beef is to be forwarded to the Castle by Messrs. Lidstone and Scarlett, who have purchased him at the remarkable figure of £120! Mr. A. Longmore, Linksfield, Banff, again takes second prize, with a fine grown ox with capital chine, his frame and fitting uneven. The Scotch polled Heifers or Cows did not gain our attention. The Irish breed classes are not well represented. The Welsh classes are better, and all very superior. The cross or mixed-breed classes present few animals of extra merit beyond Mr. Overman's, which is a very capital steer, and the Duke of Beaufort's heifer, a good well-fed animal; but as a whole these classes were not equal to many former years. Lord Hill's up-and-down Eland attracted much attention, but he offers more points to avoid rather than to attract an English grazier.

We have been rather diffuse of remarks over the cattle classes: we must curtail our review of the sheep classes. In Leicester fat wethers under 23 months, Lord Berners takes first prize, with a finely-bred, heavy-woolled pen. One sheep is of wonderful breadth of chine and plaits. Mr. W. Brown, Highgate, takes second prize: these have larger frames, a more growing and heavier kind, but not such good quality. The late Colonel Lowther's third prize pen are of his usual type, nice forms, heavy wool, but not equal quality. In the Leicesters under 23 months and 220lbs. weight, Lord Berners is again first with a lot not much inferior to the other pen. Mr. Foljambe takes second prize with a beautiful sorty set. Mr. W. Brown, Highgate, third prize; these are of a similar character to his other pen, but with better fleeces. However, the Leicesters are anything but a grand show.

Of Cotswold wethers, under 23 months, there is a very short entry, only four competitors. Mr. Hitchcock's first-prize pen are large and long in frame, and stand high; heavy for their age. Messrs. West's second-prize pen are not so long in frame, but massive. A very poor show.

Amongst Lincoln wethers, under 23 months, Mr. T. R. Casswell, Quading, Spalding, takes first prize with a su-

perior pen; they have great length of frame, and in good form and height, with pretty looks and good fleeces; they are well fed, and one is extra good; rumps a little too short. Mr. J. Pears, Mere Branstow, shows a good pen, which takes second prize: they are smaller, but in good form: the class good.

In Kentish or Romney Marsh wethers, under 23 months, Mr. F. Murton, Smeeth, takes first prize; J. Newport, Ashford, second prize. This class is poorly filled, only three pens, and they of the usual character, out of form or just proportions. The pens are scarcely so good as in other years. Their great value is in their hardihood and quality for the butcher.

The Long-woolled sheep, not being Leicesters, Lincoln, Cotswolds, or Kents, under 23 months, were a useful class, but poorly filled; the Lincoln and Leicesters taking the palm. The Scotch pens of Border Leicesters have a very thin staple. Mr. F. Street's, Harrowden, first prize pen is a nice lot; good fleeces, light offal, and good rumps.

The extra stock sheep run up to a full class, with many good animals in it; the pick being, to our mind, the long-woolled ewe, shown by Mr. Casswell, Laughton, Lincolnshire, and the Southdown wether by Lord Walsingham. The ewe is a remarkably good one, without reaching to any enormous weight; her plaits and girth very good and great.

The Southdown wether sheep, under 23 months, for quality and beauty we never saw surpassed. The pen exhibited by Lord Walsingham has never been excelled in any year. They are the most complete lot his lordship has ever shown, and weigh heavier than his specimens of the two years previous, *i. e.* in 1865, his second-prize pen weighed 46st. 9lbs.; in 1866, his Cup pen weighed 48st. 12lbs.; and 1867, the present pen weighs 49st. 12lbs., one splendid sheep weighing 17st. 3lbs. They possess a fine outline, cylindrical contour of frame, and form of great beauty and proportion; backs very level, and admirably covered, like a fat Leicester plait; exceedingly well fed, and the getting up beyond precedent: such a continuous beautiful line from head to tail is seldom seen. We tried to find a fault, but failed, unless with the necks, which although thick, were a trifle too long; their thighs, rumps, and flanks somewhat scant; wool not heavy in appearance, but thick set, and full. Sir W. Throckmorton takes second prize. His sheep have shorter frames, of very useful character; good rumps, plenty of wool, necks a trifle too long. Mr. Humphrey's third-prize lot are good animals. Mr. Rigden, Hove, receives a high commendation, with a most compact well-formed pen, but not large. The Duke of Richmond is still more backward. With two wethers under 23 months and 200lbs. weight Lord Braybrooke stands first with a very pretty and complete pen, of uniform frame and most excellent quality of hand and wool, capital legs of mutton, and with their tail well set on. This flock has certainly made its mark in the present show. Lord Walsingham takes second honour with a pen of like character with those already noticed very handsome, good length of frame, forequarters not heavy, wool better. Mr. Rigden has third prize, with a compact beautiful lot, but not large; wool good; while Mr. H. H. Penfold receives a high commendation, and the Duke of Richmond and Lord Sondes, commendations. A very pretty class, and well contested. Of the wethers above 23 months and under 35 months Lord Walsingham once more has the best with a capital pen, showing great length of frame, of uniform proportions, good backs, good plaits, fine wool; flanks, thighs and hocks not heavy. One sheep is exceedingly good. Lord Radnor takes second prize with sheep that have thicker necks, and are shorter and more compact in form, with heavier fleeces; quality not equal to the winning pens.

and one sheep not up to his fellows. Mr. W. Taylor takes third prize with a very superior pen, and the Duke of Richmond has commendation. This is a good and well-contested class.

Amongst the Hampshire or Wiltshire Down wethers under 23 months, Mr. W. B. Canning, Elston, takes first honours with a truly-good pen, beautifully fed and of great weight, but they want rather more uniformity or completeness of form. Mr. J. Russell, Eynesford, takes second prize, but his sheep are not so uniform in frame as the first pen, nor so well got up. Mr. J. J. King, North Stoke, has third prize with a pen of strong ungainly-looking sheep, but well-fed. Col. Lindsey deserves his commendation.

For Shropshire wethers under 23 months the first prize goes to Mr. T. Nock, Shiffnal; second to Mr. Matthews, Montford; third to Mr. Beach, Dudley. Lord Chesham gets a high commendation; Mr. H. Smith, Sutton Maddock, a commendation. Mr. Nock's pen is the Birmingham best of this breed, and many of the others have come on. They are almost all good. For wethers above 23 months and under 35 months, Lord Wenlock takes first prize with a very good lot, possessing much wool and great length and depth of frame, with Mr. H. Smith, of Sutton Maddock, second, with a lot of good quality, of great size and length; while Mr. Beach, of Dudley, takes a high commendation. Only three entries, and all with honours!

The Oxford Downs were one of the best-represented breeds of sheep in the show. For wethers under 23 months the first prize goes to Mr. S. Druce, Eynsham, to whose father, if we mistake not, we are indebted for the commencement of this profitable breed. This is a very capital pen—long frames, standing well, with well-thrown-out forms, and very fat. This pen also carries away the Silver Cup as the best pen in the Shropshire, Oxfordshire, or cross-bred classes. Mr. R. J. Newton, Woodstock, takes the second honour for a capital strong and useful pen with long well-filled-out forms; and Mr. A. Rogers, Bromham, has third prize. These have thick frames on short legs, and compact frames. The Duke of Marlborough receives a high commendation; and Mr. J. Treadwell, Upper Winchendon, a commendation; Mr. Harry Overman's and Mr. Stilgoe's being the only entries unnoticed.

In the mountain breeds for wethers of any age, white-faced, Mr. J. Tapp Burch, South Molton, takes first prize with very useful well-formed and well-fed mountaineers; and Mr. W. Smith, High Hoopers, has second prize with a similar lot; both have horns passing under their jaws. This is not so good a class as last year. For wethers, black or speckled-faced of any age, Mr. W. McCombie takes first honours; and Mr. Stewart, of Aberdeen, second prize. All we can say is they are large and good.

The Ryeland Cheviots and Dorsets, or any other pure breed not before specified, make up an incongruous class, but not well filled, and we did not observe any pen worthy of particular notice.

There was a large class of extra stock for silver medals, mainly the reserves of other pens in the proper classes.

With Cross-bred sheep, of long and short-woulded wethers under 23 months, Mr. J. Overman regains honours for crosses both here and with wethers under 300lbs. He well deserves both prizes, although no commendations were awarded.

We found the eland in the pig department of the show, but we wish it to be understood that we describe him as of the cattle tribe. He has a large elongated frame, nearly the size of a well-grown ox. He has a high protuberance on his withers, after the dromedary character, and coming a long way on to his back; a very deep but narrow chest; much skin, hanging loose; a queer deer-

like head, with upright parallel horns like a goat; a light thin body, not apparently fat; his girth very light; long legs; his colour fawn, and his general contour similar to an over-grown very-badly-built buck or male deer. He remained unsold until late in the week, and his place in a show of English fat stock was simply an absurdity. For pigs not exceeding 6 months, Mr. J. Coate, Blandford, takes first prize with some very pretty little square-framed beauties, compact in form and evenly fed; while Mr. S. G. Stearn, of Brandeston, has second prize. This pen has longer frames, long thin hair, and with small prick ears. Her Majesty takes third prize with some pigs of a smaller breed, fine hair, ears pricking up, and well fattened. Sir R. Clifton, who is training on as a breeder, receives a high commendation with a uniformly good pen. In pigs above 6 and not exceeding 9 months, the first prize goes to Mr. T. L. M. Cartwright, of Lady Bank, with a very beautiful pen specially remarkable for their handsome heads, true frames, and fine hair. Mr. J. Kent, Goodwood, takes second honours with a very complete lot of black pigs of rather coarse quality; while Capt. R. P. Warren, Basingstoke, has third prize with a lot rather longer in form but of similar type. Lord Radnor gets a high commendation, and Mr. Stearn a commendation. In pigs above 9 and not exceeding 12 months, the first prize goes to Mr. J. Treadwell, Upper Winchendon. These are large well-formed Berkshires, frames rather long, hair long and thin. Capt. R. P. Warren is second in this class with a smaller lot, but more compact and deep in form. Her Majesty gains the third prize with one pig, too small for his class. For pigs above 12 months old and under 18 months, Lord Radnor takes the Cup with a superb pen such as is seldom seen in any show; they are very deep in form and exceedingly well fed, being even and firm throughout; hair fine and thin. Messrs. J. and F. Howard take second prize with pigs of a larger type, rather longer frames, yet very compact and well formed, but of a quality not equal to the prize pen. Mr. King, North Stoke, has third prize with pigs well fed, but not so fine in hand. The extra stock contains nothing worthy of very especial notice. The show of pigs is a small one, and not generally of any very high character.

AWARD OF PRIZES.

JUDGES.

CATTLE.

DEVONS, HEREFORDS, SUSSEX, NORFOLK OR SUFFOLK, POLLED, LONG-HORNED, IRISH, CROSS OR MIXED.

G. W. Baker, Orwell-park, Ipswich.

Chas. Randall, Chadbury, Evesham.

C. Vevers, Irvington-park, Leominster.

SHORTHORNS: SCOTCH AND WELSH.

Edwd. Bowley, Siddington House, Cirencester.

Geo. Drewy, Holker Grange, Lancashire.

Wm. Torr, Aylesby Manor, Grimsby.

SHEEP.

LEICESTERS, COTSWOLDS, LINCOLNS, KENTISH OR ROMNEY MARSH, AND OTHER DISTINCT LONG WOOLS, OXFORDSHIRE, MOUNTAIN, AND CROSS-BRED SHEEP.

T. Brown, Marham, near Downham.

Robt. Cresswell, Ravenstone, Ashby-de-la-Zouch.

Benjmn. Painter, Burley-on-the-Hill, near Oakham.

SOUTH-DOWNS, HAMPSHIRE OR WILTSHIRE, SHROPSHIRE, RYELAND, CHEVIOT, AND DORSET SHEEP.

G. Cureton, Beam House, Shrewsbury.

H. Fookes, Whitchurch, Blandford, Dorset.

Wm. Sainsbury, West Lavington, Devizes.

PIGS.

Albert Edmonds, Longbourne, Farrington.
John Moon, Westwell-street, Plymouth.
Henry Smith, Cropwell Butler, Notts.

CATTLE.

DEVONS.

Steers, not exceeding 2 years and 6 months old.
First prize of £20, to Her Majesty the Queen, The Prince Consort's Farm, Windsor.
Second of £10, to J. H. Buller, Crediton, Devon.
Commended.—H. Frampton, Blandford, Dorset.
Steers, not exceeding 3 years and 8 months old.
First prize of £30, to W. Smith, Higher Hoopern, Devon.
Second of £20, to J. Overman, Burnham Sutton, Norfolk.

Third of £10, to W. Taylor, Glenley, Sussex.
Highly commended.—W. Farthing, Stowey Court, Bridgwater; and H. Frampton, Blandford, Dorset.

Steers or Oxen, above 3 years and 8 months old.
First prize of £30, to W. Smith, Higher Hoopern, Devon.

Second of £20, to W. Farthing, Stowey Court, Bridgwater.

Third of £10, to J. J. Farquharson, Blandford, Dorset.
Commended.—J. Overmann, Burnham Sutton; and J. H. Buller, Crediton, Devon.

Heifers, not exceeding 4 years old.
First prize of £25, R. Burton, Place Barton, Broadclyst, Devon.

Second of £15, to W. Barrington, Thorley, Yarmouth, Isle of Wight.

Third of £10, to Her Majesty the Queen, The Prince Consort's Farm, Windsor.

Highly commended.—W. Smith, Higher Hoopern, Exeter.

Cows, above 4 years old.

First prize of £25, to W. Farthing, Stowey Court, Bridgwater (Young Fairmaid).

Second of £15, to J. Coote, Hammoon, Blandford, Dorset.

Third of £10, to W. Taylor, Glenley, Eastbourne (Rose).

Highly commended.—R. Farthing, Farrington, Bridgwater.

HEREFORDS.

Steers not exceeding 3 years and 6 months old.
First prize of £20 to R. Hill, Orleton Court, Ludlow.
Second of £10 to W. Tudge, Adforton, Herefordshire.
Highly commended: J. H. Arkwright, Hampton Court, Leominster.

Steers, not exceeding 8 years and 3 months old.
First prize of £30, to J. Beach, The Hattons and Flour Mills, Dudley.

Second of £20, to Her Majesty the Queen, the Prince Consort's Farm, Windsor.

Third of £10, to B. Cocks, Twyford, Munslow, Salop.
Highly commended: H. Bettridge, East Hanney, Wantage.

Commended: Col. Robt. Loyd Lindsay, Lockinge Park, Wantage.

Steers, or Oxen, above 3 years and 3 months old.
First prize of £30, to J. Beach, The Hattons and Flour Mills, Dudley.

Second of £20, to G. Pitt, Chadnor Court, Dilwyn, Hereford.

Third of £10, to J. E. Jones, Springfield, Hereford.
Highly commended: P. Turner, The Leen, Pembridge, and L. Loyd, Monk's Orchard, Addington.

Commended: The Earl of Daruley, Cobham Hall, Gravesend.

Heifers not exceeding 4 years old.

First prize of £25, to H. Bettridge, East Hanney, Wantage.

Second of £15, to J. H. Arkwright, Hampton Court, Leominster (Ladylift).

Third of £10, to Her Majesty the Queen, The Prince Consort's Farm, Windsor.

Highly Commended, J. W. James, Mappowder Court, Blandford.

Cows above 4 years old.

First prize of £25, to H. Bettridge, East Hanney, Wantage.

Second of £15, to R. V. C. Groves, Berrington, Salop.

Third of £10, to A. James, Monnington-on-Wye, Hereford.

SHORTHORNS.

Steers, not exceeding 2 years and 6 months old.
First prize of £20, to His Grace the Duke of Sutherland, Lilliehurst, Newport, Salop.

Second of £10, to The Earl of Aylesford, Packington Hall, Coventry.

Highly Commended.—Rev. W. H. Beaver, Penning Court, Ross.

Steers, not exceeding 3 years and 3 months old.
First prize of £30 to G. S. Foljambe, Osberton Hall, Worksop.

Second of £20, to The Earl of Aylesford, Packington Hall, Coventry.

Third of £10, to R. Stratton, Wall's Court, Bristol.

Highly Commended.—F. Leney and Son, Watlington, Kent.

Commended.—Sir W. de Capell Brooke, Bart., Kettering.

Steers, or Oxen, above 3 years and 3 months old.
First prize of £30, to The Duke of Beaufort, Badminton, Wilts.

Second of £20, to Lord Penrhyn, Penryn Castle, Bangor.

Third of £10, to R. Wood, Clapton, Northamptonshire.

Highly commended.—T. Pulver, Broughton, Northampton.

Heifers, not exceeding 4 years old.

First prize of £25, to R. Stratton, Walls Court, Bristol (Lady Crosbie).

Second of £15, to Lord Faversham, Duncombe Park, Helmsley (Violet).

Third of £10, to the Earl of Hardwicke, Wimpole Arrington, Cambridge (Lottery).

Highly commended.—W. Seymour, Friskney, Lincolnshire.

Commended.—J. Walter, Bearwood, Berkshire (Lady Langston).

Cows, above 4 years old.

First prize of £25, to A. Dugdale, Rose Hill, Burnley (Kent Cherry).

Second of £15, to R. Taylor, Hazleleigh Hall, Maldon Essex (Princess Royal).

Third of £10, to T. Mead, Wilstone, Tring.

Highly commended.—The Duke of Sutherland, Lilliehurst, Newport, Salop (Forest Bell).

Commended.—R. Stratton, Wall's-court, Bristol (Erangeline).

SUSSEX.

Steers or Oxen, not exceeding 3 years old.
First prize of £20, to G. C. Coote, Tortington Arundel.

Second of £10, to J. and A. Heasman, Angmering Arundel.

Steers or Oxen, above 3 years old.
First prize of £25, to J. and A. Heasman, Angmering Arundel.

Second of £15, to W. Botting, Westmeston Place, Harstpierepoint.

Third of £10, to G. C. Coote, Tortington, Arundel.

Heifers not exceeding 4 years old.

First prize of £20 to J. Shoesmith, Barwick, Lewes.

Second of £15, to G. Cane, Berwick Court, Lewes.

Highly commended, G. Jenner, Udimore, Sussex.

Commended, G. C. Coote, Tortington, Arundel.

Cows above 4 years old.

First prize of £20, to G. C. Coote, Tortington, Arundel.

Second of £15, to T. Smith, Knell Beckley, Sussex.

NORFOLK OR SUFFOLK POLLED.

Steers or Oxen of any age.

First prize of £15 withheld.

Second, of £10, to J. Sewell, North Pickenham, Norfolk.

Heifers or Cows of any age.

First prize of £15, to W. M. Bond, Bacton, Norfolk.

Second, of £10, to W. Postle, Smallborough Hall, Norwich.

LONGHORNS.

Steers or Oxen, of any age.

The prize of £10, to W. T. Cox, Sponden Hall, Derby.

Heifers or Cows, of any age.

The prize of £10, to W. T. Cox, Sponden Hall, Derby.

SCOTCH-HORNED.

Steers or Oxen of any age.

First prize of £20, to the Duke of Sutherland, Dunrobin Castle, Golepie, N.B.

Second of £15, to the Earl of Derby, Knowsley, Lancashire.

Heifers or Cows of any age.

First prize of £15, to C. R. Gunter, Wetherby, Yorkshire.

Second of £10, No other entry.

SCOTCH POLLED.

Steers or Oxen, of any Age.—First prize of £20 to W. M'Combie, Tillyfour, Aberdeen. Silver medal to the breeder, A. Longmore, Linksfield, Rattie, Banff.

Second of £10, Andrew Longmore, Linksfield, Roltie, Banff.

Commended, R. Jardine, M.P., Cartlemilk, Lockerbie, Dumfries.

Heifers or Cows, of any age.—First prize of £15 to J. Reed, Graystone, Alford, Aberdeen.

Second, of £10 to the Duke of Buccleuch and Queensbury, Tibbers, Dumfries.

IRISH.

Steers or oxen, of any age.

First prize of £10 to R. Wortley, Sniffeld, Norfolk.

Second of £5 to Lord Berners, Keythorpe Hall, Leicester.

Heifers or cows, of any age.

First prize of £10 to Lord Berners, Keythorpe Hall, Leicester.

Second of £5—Withheld.

WELSH.

Steers or oxen (runts), of any age.

First prize of £20 to Lord Penrhyn, Penrhyn Castle, Bangor.

Second of £10 to Captain H. Platt, Bryn-y-Nwadd, Bangor.

Highly Commended.—O. Phillips, Trefrith, Cardigan.

Commended.—The class.

Heifers or cows of any age.

First prize of £10 to O. Phillips, Trefrith, Cardigan.

Second of £5—No other entry.

CROSS OR MIXED BRED.

Steers, not exceeding 8 years old.

First prize of £25, to J. Stewart, Union-street, Aberdeen (Shorthorn and Polled).

Second of £15, to J. D. Allen, Tisbury, Salisbury (Hereford and Shorthorn).

Steers or Oxen, above 8 years old.

First prize of £25, to J. Overman, Burnham Sutton, Norfolk (Devon and Shorthorn).

Second of £15, to J. Beach, Flour Mills, Dudley (Shorthorn and Polled).

Third of £10, to Colonel Robert Loyd Lindsay, M.P., Lockinge Park, Wantage (Hereford and Shorthorn).

Highly commended, J. and W. Martin, Newmarket, Aberdeen (Aberdeen and Shorthorn).

Heifers, not exceeding 4 years old.

First prize of £20, to the Duke of Beaufort, Badminton, Wilts (Shorthorn and West Highland).

Second of £10, to J. and W. Martin, Newmarket, Aberdeen (Aberdeen and Shorthorn).

S H E E P.

LEICESTER SHEEP.

Fat Wethers, 1 year old (under 23 months).

First prize of £20 to Lord Berners, Keythorpe Hall, Leicester.

Second of £15 to W. Brown, Holme-on-Spalding Moor, York.

Third of £5 to the late Hon. Col. Lowther, Oakham, Rutland.

Commended—J. Newman, Harrowden, Bedford.

Fat Wethers, 1 year old (under 23 months). Each sheep not to exceed 220 lbs. live weight.

First prize of £20 to Lord Berners, Keythorpe Hall, Leicester.

Second of £15 to G. S. Foljambe, Worksop, Nottingham.

Third prize of £5 to W. Brown, Holme-on-Spalding Moor, York.

Commended—The late Hon. Col. Lowther, Oakham, Rutland.

COTSWOLDS.

Fat Wethers, 1 year old (under 23 months).

First Prize of £20 to W. H. Hitchcock, Cirencester.

Second of £15 to T. & G. West, Bletchington, Oxford.

Third of £5 to W. Downe, Monkton, Glamorgan.

LINCOLNS.

Fat Wethers, 1 year old (under 23 months).

First prize of £20, to T. R. Caswell, Quadring, Lincolnshire.

Second of £15, to J. Pears, Mere, Branston.

Third of £5, to T. Gunnell, Milton, Cambridge.

KENTISH OR ROMNEY MARSH.

Fat Wethers 1 year old (under 23 months).

First prize of £15 to F. Murton, Smeeth, Kent.

Second of £10 to J. Newport, Ashford, Kent.

ANY OTHER LONG-WOOLS.

Fat Wether, 1 year old (under 23 months).

First prize of £15 to F. Street, Harrowden, Beds.

Second of £10 to T. R. Caswell, Quadring, Lincoln.

SOUTH-DOWNS.

Fat wethers, 1 year old (under 23 months).

First prize of £20 to Lord Walsingham, Thetford, Norfolk.

Second of £10 to Sir W. Throgmorton, Bart., Buckland, Berks.

Third of £5 to H. Humphrey, Ashington, Sussex.

Highly Commended.—W. Rigden, Hove, Sussex.

Commended.—Duke of Richmond, Goodwood.

Fat Wethers, 1 year old (under 23 months), each

Sheep not to exceed 200lbs. live weight,

First prize of £15, to Lord Braybrooke, Audley End, Essex.

Second, of £10, to Lord Walsingham, Thetford, Norfolk.

Third, of £5, to W. Rigden, Hove, Sussex.

Highly commended, H. H. Penfold, Selsey, Sussex.

Commended, Lord Sondes, Thetford, Norfolk; and Duke of Richmond, Goodwood.

Fat wethers, 2 years old (above 23 and under 35 months).

First prize of £20 to Lord Walsingham, Thetford, Norfolk.

Second of £10 to Earl Radnor, Colehill, Highworth.

Third of £5 to W. Taylor, Glenley, Sussex.

Commended.—Duke of Richmond, Goodwood.

HAMPSHIRE OR WILTSHIRE-DOWN.

Fat Wethers, 1 year old (under 23 months).

First prize, of £20, to W. B. Canning, Elston, Wiltshire.

Second, of £15, to J. Russell, Eynsford, Kent.

Third, of £5, to J. P. King, North Stoke, Berks.

Commended, Col. Lindsay, M.P., West Ilaley, Berks; and L. Loyd, Addington, Surrey.

SHROPSHIRE.

Fat Wethers, 1 year old (under 23 months).

First prize of £20, to T. Nock, Shiffnal, Shropshire.

Second, of £10, to H. Matthews, Montford, Shrewsbury.

Third, of £5, to J. Beach, Dudley, Worcester.

Highly-commended, Lord Chesham, Latimer, Bucks.

Commended, H. Smith, Sutton Maddock, Shropshire.

Fat Wethers, 2 years old (above 23 and under 35 months).

First prize of £15, to Lord Wenlock, Much Wenlock, Salop.

Second of £5, to H. Smith, Sutton Maddock, Shropshire.

Highly-commended, J. Beach, Dudley, Worcester.

OXFORDSHIRES.

Fat Wethers, 1 year old (under 23 months).

First prize of £20, to S. Druce, Eynsham, Oxford.

Second of £15, to R. J. Newton, Woodstock, Oxford.

Third of £5, to A. Rogers, Bromham, Bedford.

Highly-commended, Duke of Marlborough, Woodstock, Oxford.

Commended, J. Treadwell, Upper Winchendon, Bucks.

MOUNTAIN.

Fat Wethers (of any White-faced Mountain breed, of any age).

First prize of £15 to J. Tapp, Burch, South Molton, Devon.

Second of £10 to W. Smith, High Hoopern, Devon.

Fat Wethers (of any Black-faced or Speckle-faced, of any age).

First prize of £15 to W. M'Combie, Tillyfour, Aberdeen.

Second of £10 to J. Stewart, Union Street, Aberdeen.

RYELANDS, CHEVIOTS, AND DORSETS.

Fat Wethers.

First prize of £15 to H. Farthing, Nether Stowey, Somerset.

Second of £10 to J. B. Downing, Holme Lacy, Hereford.

Highly commended, J. L. Wynne, Coed Coch, Denbigh.

CROSS-BREDS.

Long and Short-woolled Cross-bred fat Wethers, 1 year old (under 23 months).

First prize of £20 to J. Overman, Burnham Sutton.

Second of £15 to G. Hine, jun., Oakley, Bedford.

Third of £5 to Col. R. L. Lindsay, Wantage, Berks.

Long and Short-woolled Cross-bred fat Wethers, 1 year old (under 23 months). Each Sheep not to exceed 220lb. live weight—First prize of £10 to J. Overman, Burnham Sutton, Norfolk.

Second, of £5 to the late Hon. Col. Lowther, M.P., Oakham, Rutland.

PIGS.

Of any breed not exceeding six months old.

First prize of £15 to J. Coate, Blandford, Dorset.

Second of £10 to S. G. Stearn, Brandeston, Suffolk.

Third of £5 to H.M. the Queen, Windsor.

Highly commended: Sir R. J. Clifton, Clifton Hall, Nottingham.

Of any breed above six and not exceeding nine months old.

First prize of £15 to T. L. M. Cartwright, Lady Bank, Fife.

Second of £10 to J. Kent, Goodwood.

Third of £5 to Captain R. P. Warren, Basingstoke.

Highly commended: Earl Radnor, Colehill, Highworth.

Commended: S. G. Stearn, Brandeston, Suffolk.

Of any breed, above 9 and not exceeding 12 months old.

First prize of £15, to J. Treadwell, Upper Winchendon, Bucks (Berkshires).

Second of £10, to Capt. R. P. Warren, Basingstoke.

Third of £5, to Her Majesty the Queen, Windsor.

Highly Commended.—J. Kent, Goodwood.

Of any breed, above 12 and under 18 months old.

First prize of £15, to Earl Radnor, Colehill, Highworth.

Second of £10, to J. and F. Howard, Bedford.

Third of £5, to J. P. King, North Stoke, Berks.

GOLD MEDALS.

Gold Medal to the breeder of the best Steer or Ox in any of the Classes to W. M'Combie, Tillyfour, Aberdeen.

Gold Medal to the breeder of the best Heifer or Cow in any of the Classes to E. Tanner, Broomfield, Salop (Hereford Heifer).

SILVER CUPS.

Silver Cup, value £40, for the best Steer or Ox in any of the Classes, to W. M'Combie, Tillyfour, Aberdeen.

Silver Cup, value £40, for the best Heifer or Cow in any of the Classes, to H. Bettridge, East Hanney, Berks (Hereford Heifer).

Silver Cup, value £20, for the best pen of Leicesters, Cotswolds, Lincolns, Kentish, or other Long-woolled breed, in any of the Classes, to Lord Berners, Keythorpe Hall, Leicester.

Silver Cup, value £20, for the best pen of one-year-old Southdowns, Hampshire or Wiltshire Downs, to Lord Walsingham, Merton Hall, Thetford.

Silver Cup, value £20, for the best pen of Shropshire, Oxfordshire, Cross-bred, or any other breed of sheep (not specified in prize-list) in any of the classes, to S. Druce, Eynsham, Oxford.

Silver Cup, value £20, for the best pen of pigs in any of the classes, to the Earl of Radnor, Colehill, Highworth.

EXTRA STOCK.

Silver Medal for the best Steer or Ox in Extra Stock; also £5 prize, to J. Overman, Burnham Sutton, Norfolk (Devon and Shorthorn Cross).

Silver Medal for the best Heifer or Cow in Extra Stock, also £5 prize, to Lord Penrhyn, Wicken Park, Stoney Stratford, Northampton (Shorthorn Heifer).

Silver Medal for the best Leicester wether Sheep in extra stock, to G. S. Foljambe, Osberton Hall, Worksop.

Silver Medal for the best Leicester Ewe in extra stock, to G. S. Foljambe, Osberton Hall, Worksop.

Highly commended: H. Browne, Holme-on-Spalding Moor, York.

Silver Medal for the best Long-woolled Sheep (not Leicester) in extra stock, to J. H. Casswell, Loughton, Lincolnshire (Lincoln).

Silver Medal for the best Southdown Wether Sheep in extra stock, to Lord Walsingham, Thetford, Norfolk.

Highly commended: Sir W. Throckmorton, Bart., Buckland, Berks; the Duke of Richmond, Goodwood; and Lord Sondes, Elmham Hall, Thetford.

Silver Medal for the best Southdown ewe in extra stock, to Sir W. Throckmorton, Bart., Buckland, Berks.

Highly commended: Lord Sondes, Elmham Hall, Thetford.

Silver Medal for the best short-woolled sheep (not Southdown) in extra stock, to J. McGill, Rotchell, Dumfries (Cheviot).

Highly commended: W. B. Canning Elston, Wilts; and J. B. Downing, Holme Lacy, Hereford.

Commended: J. Lawrence, Bulbridge, Wilts.

Silver Medal for the best cross-bred sheep (long and short-woolled cross) in extra stock, to J. Overman, Barham Sutton, Norfolk.

Highly commended: R. J. Newton, Woodstock, Oxon.

Silver Medal for the best pig in extra extra stock, to Earl Radnor, Colehill, Highworth.

Highly commended: J. K. Tombs, Langford, Gloucestershire.

Commended: Capt. R. P. Warren, Basingstoke.

THE IMPLEMENTS.

[FROM OUR OWN CORRESPONDENT.]

There is a very good collection of agricultural machinery, considering the space at the disposal of the Club, while the area occupied by stands is considerably enlarged since last year by an extension of the front of the galleries, but still the pressure of applications prevents anything being shown except the very choicest and most important articles from each exhibitor. The out-door summer shows have a far greater number of objects, but here they are more select. It is to be regretted, however, that several firms, such as Ruston and Proctor, Pickaley and Sims, and others, were absent, from unfortunately overlooking punctuality in entering, while various entries have been cancelled owing to some informalities. The Arcade, noisy enough with the chatter of exhibitors' agents, show-men, and spectators, offered many things of interest. Milburn's desiccated brewers'-grains are a good nutritious food, for which there must certainly be a good market ready. You can get the wet grains now at about two shillings per cwt.; and you know what capital stuff they are, if they would but "keep." Well, for five or six shillings per cwt. you can get the "grains minus about 70 per cent. of water, sweet and dry, and that will be "good" for any reasonable time. They do look a little husky, to be sure; but the chemical analysis tells you that, with over 40 per cent. of heat and fat producing constituents, 19 per cent. of flesh-formers, and 6 or 7 per cent. of oil and fatty matter, you need not mind the 17 or more per-centage of woody fibre, a large portion of which is digestible. The wet grains are dried by being passed through heated metal cylinders. Another patent is that of Mr. E. J. Davis, by which brewers'-grains are made into a regular "article of commerce," instead of being disposed of day by day to customers immediately round the brewery. A neat contrivance is Myers' "water meter," on the only sound principle, of a piston moving to and fro in a cylinder. Brown and May have introduced a new feed-water heater under a foot-plate at the side of their portable engine, the

water being heated by the exhaust steam passing through. By this admirable arrangement for securing the advantages of a well-known principle about 25 per cent. of fuel may be saved; and the makers supply it free of charge with all engines above six-horse power. On Clayton and Shuttleworth's stand of steam-engines and thrashing-machines, renowned for perfect efficiency in operation and for the highest possible finish in the working parts to ensure durability, we observed a traction-engine or farm-locomotive, embracing certain improved arrangements. Underhill's traction-engine is remarkable for its travelling wheels with zigzag felloes—which appear precisely adapted for bearing weight upon hard or soft ground, and for resisting the tendency to "skid"—so that, with this form of wheel, no spud blades or other temporary attachments should be needed, no matter where the engine may have to travel. Amongst the well-designed and perfectly-finished steam-engines of Tuxford and Sons was a beautiful little one-horse portable—a sort of infant engine—constructed with every part similar to the corresponding parts of a large engine, or in other words, of precisely equal merit with the best and most powerful engines, only on a smaller scale. For a few pence per day in coals, you can drive a chaff-cutter or pulper, cake-breaker, or pump, or, in fact, do any work now performed by a couple of horses trailing round in the old "horse-power" circle—a saving of outlay that makes one wonder why such a cheap and handy motor is not employed everywhere. A noticeable feature in the Boston engines is the natty and beautiful arrangement of the throttle-valve, the starting-valve, and the safety-valve, all in one small casting; also, the use of brass "glands" having an inner bush, so that screwing tighter does not displace the packing; again, the shaping of the safety-valve with a spherical surface, so that it is always steam-tight, no matter in what posture—a great improvement upon the old spindle-valve. Aveling and Porter's agricultural locomotive is still unsurpassed by any rival engine, and one chief merit is the readiness with which the steering-wheel alters the direction of advance, the man having a steady control over the position of the forecarriage, which is not found in many of the pitch-chain arrangements for this purpose. Photographs were exhibited, representing their simple and strong tramway engine, and their colossus of a road-way stone-crushing engine, the performances of which have been so thoroughly appreciated at the west end of the metropolis. John Fowler and Co. exhibited, in addition to their ten-horse headland engine, with winding-drum and rope-coiling movement, and a three-furrow plough, their new plough for light lands—which turns eight furrows at once, without unworkmanlike differences in depth of furrow—and also their new light-land cultivator. This implement is constructed on a principle lately patented, and is only adapted to be worked by the double-engine sets of tackle. It is made of 12, 15, and 18 feet breadth, and is constructed with jointed sides, so as to follow the inequalities of the ground. These hinged pieces may be removed when cultivating stiff land, so as to bring the breadth of the implement down to 6 or 8 feet. Any kind of tines or points may be used.

On Messrs. James and Frederick Howard's extensive stand of ploughs, harrows, haymakers, and horses, was one of their steam-ploughing engines, constructed with transverse boiler placed upon a framing, thus relieving the boiler itself of considerable strains, and fitted with two rope-drums, so that it can be used on the stationary system as a combined engine and windlass, or on the headland-moving principle, as one of a pair hauling one implement, or as one of a pair of engines hauling two implements at once, by which method, as proved in the field at Bury, an extraordinary area of work can be executed in a day. Another very noticeable implement

on this stand was the new reaping machine and mower, which is said to offer such advantages as these: The framework is constructed wholly of iron and steel; the effect of side-draught is in a great measure neutralized by having two driving-wheels; there is no weight on the horses' necks; bevel-gear is used for the first or slower motion, and spur-gear for the second or more rapid motion, affording special facilities for altering the speed by means of change-wheels; the draught is light; the suspension of the cutter-bar behind the driving-wheels adapts the machine to uneven surfaces; the self-raking apparatus is driven independently of the cutting motion; the gathering arms take hold of the corn at the same height from the ground as the delivery-rakes, but by a simple "double-cam" movement, after they have brought the corn upon the platform, they rise and pass over it; the delivery-rakes, however, sweeping close to the quadrant platform, and dropping neat sheaf-bunches in the rear of the machine, far enough out of the line of the next track. But one of the main recommendations of the machine is the strong and perfect construction of all its parts.

Hornsby and Sons exhibited the largest number of mowing and reaping machines, of which they have sent out some two thousand during the past season. Peculiarities in their machines are—a new patent "lifter" for raising the ears of laid corn on the inner side of the machine, to prevent their being cut off short; a new appliance for varying at pleasure the size of the sheaves delivered by the self-raker. Then the "Paragon" grass-mower is improved in detail; and their new "Premier" is a cheap back-delivery machine, to which the "universal" attachments can be added. Hornsby's portable engine is peculiar for its lofty steam-dome, with the cylinder placed inside; and their thrashing-machine is fitted with the novel and beautiful revolving corn-screen which was brought out at Bury.

Burgess and Key exhibited the M'Cormick reaper which won the Great Gold Medal in Paris; also their well-known improved screw-platform reaper, and their grass-mower. The special merit of these machines is in their power of dealing with the heaviest crops, their great strength of construction, their durability, the simplicity of their working-parts, particularly the lightness of draught secured by the direct thrust of the crank connecting-rod, on a principle introduced by Burgess and Key, and, again, the position of the cutter-bar exactly in a line with the travelling wheels; by which arrangement hills and dales make no difference to the length of the stubble left.

Walter A. Wood's Paris prize grass-mower was shown, and also the new one-horse reaper, which, though manufactured in America, is now delivered at any principal railway station in England, for the hitherto unprecedented price of fifteen guineas. We have Mr. Granston's authority for stating that over seventy thousand of Wood's machine have been made and sold, of which more than ten thousand have been sold in this country, and three thousand of them within the past year.

For a stand of implements loaded with prizes, we should pick out that of James Coultas, whose corn and manure and seed drills need no description.

Among the articles of Nye and Co. was a capital little machine for bone crushing by hand, intended to prepare the bones left from the dinner table, so that poultry may find in them a valuable digestive and calcareous adjunct to soft fattening food; this is an invention of Messrs. Crookes, the celebrated poultry engineers, of Carnaby-street; and another of their new and useful articles is a patent ventilating and sifting corn bin.

Boby exhibited a variety of corn screens, the novelty in which is the recent improvement of a movable wire bed for the purpose of getting rid of the broken kernels of

barley, the pernicious effect of which on the malting floor is well known. This apparatus was invented by Bass, the brewers, of Burton-on-Trent. Boby's is a very light and simple haymaker; and we had shown for the first time an assortment of his ploughs, in the construction of which the great object has been to simplify and make up the implement with as few wearing parts as possible, and they so arranged as to be easily, quickly, and inexpensively renewed; they are fitted with wheels entirely new in construction, with very ingenious and valuable patented "bushes" for excluding dirt and lubricating with oil.

We visited the stand of Corcoran and Co., the mill-stone makers and wire weavers, and observed the new smut machine, "The Premier." This is probably the best wheat cleaner yet introduced to the notice of the English miller. With the exhaust combined, it gives the grain a thorough scouring, and, what is of the greatest importance, takes off the beard, thereby giving the flour when dressed a bright and golden shade, instead of the dull blue when the wheat is not well cleaned and smutted.

On the stand of E. R. and F. Turner, we found portable steam-engines, a French-burr grinding-mill, and a smaller mill, in which the lower stone is the "runner;" also, an assortment of smooth-roller crushing-mills, for which the firm has attained such celebrity; a very powerful oilcake-breaker, with a mouth $2\frac{1}{2}$ feet wide, to take in the cakes sideways; a malt-mill, with an equable pressure along the face of the rolls, caused by the use of a compound wedge and spiral springs; a horse-gear, fitted with a clutch to the intermediate motion, for stopping while the horses are going; and lastly, a mowing-machine on a new principle, invented by M. Ganaud, of which no doubt we shall hear more during the trial season.

Bentall's merit does not seem to consist in perpetually bringing out novelties, though he has earned a great name for many already introduced, but more especially in improving details until his chaff-engines, pulpers, horse-gears, and leave nothing more to be desired in strength, durability, excellence of arrangements, admirable finish of working parts, and, at the same time, that paramount recommendation in these days—extraordinary cheapness.

The Agricultural and Horticultural Association (limited), showed some improvements in fencing, such as the patent flexible sheepfold fence, a combination of wire meshes and upright iron tubes, far cheaper than the handy but costly iron-wheeled hurdles, strong enough to stand against cattle; also a novel construction of continuous iron-bar fencing, without the old notch and wedge method of fastening the horizontal bars to the uprights, and again, some new iron farm-gates, put together on the principle of iron bedsteads, with solid cast-iron corners.

In Penney and Co.'s machinery a novelty is the addition of a blower to their small adjustable rotary corn-screen, a considerable improvement, giving to farmers, in fact, the capacity of two machines in one.

Robey and Co.: Steam engines, portable and fixed. Their thrashing machines, corn-mills, and sawing machines are so well established in home and foreign fame, for soundness of construction, that we need hardly allude to their presence in the Show. One of the most noticeable articles was their stationary steam engine, with upright boiler and vertical cylinder, which, besides requiring no brickwork or masonry foundation, occupies less space than a horizontal engine, and can be fixed where there is no room for a horizontal engine.

We have always had faith in Tinkler's wood barrel churns; but rivals have appeared in W. Alway's metallic barrel churns, made of block tin, with hollow ends to hold hot or cold water for giving the requisite 60 degrees of temperature to the cream. And the Atmospheric Churn Company offer a cheap tubular vertical dash churn

that, for expedition with small quantities of milk or cream, is said to beat everything.

Day's six-guinea medicine-chest is the handiest and completest we know of—in fact, it lets a farmer see a whole "pharmacy," not exactly in a nutshell, but in a neat little box.

We caught sight of a pretty little contrivance, on S. and E. Ransome's stand, namely, Wilmott's patent hand-truck, which has a foot-catch for fastening the wheels when getting the sack or load upon the barrow.

If we wanted a perfect horse-hoe for heavy or cloddy or weedy soil, we might take one of Wilkinson and Sons' newly-invented tools; in which, with facilities, you have each lever kept at a fixed depth by means of a regulating wheel. This, in fact, is one of the best regulated implements that has appeared, and may undoubtedly extend the practice of horse-hoeing into new districts.

Lydon's contrivance for tapping heated hay-ricks, exhibited by Garrett and Sons, is on an apparently sound principle, and, moreover, has lots of cases of successful application reported in its favour. A long tube of about four inches diameter, with a pointed wood cone at the end, is driven horizontally into the stack by the blows of a hammer, and heated gases and moisture from the centre of the stack, entering the perforated tube, escape into the outer air. The inventor attaches an upright tube to the outer end, which acts like a chimney, carrying upward the gas and steam. If a powerful "suction" would hasten the withdrawal of hot gas from the interior of the rick, there is no reason that we know of why a piston, with upward-opening valve, like a suction-pump bucket, should not be worked in the horizontal tube.

Charles Burrell's single-cylinder traction-engine, with driving-chain on either side, is powerfully-constructed, and devoid of all extra parts likely to puzzle the intellect of an agricultural labourer.

We have seen no waggons, carts, or other farm vehicles of more admirable construction, arranged with better fittings, or more perfect in workmanship and material, than those of the Beverley Iron and Waggon Company. Their one-horse reaper and grass-mower are now offered, in addition to their great swathe-delivery reaper, which is still far ahead of all competitors for extent of acreage cut per day.

An extensive collection of implements and machines, prize ploughs, harrows, mills for all purposes, root-cutters, and chaff-engines was shown by Ransomes and Sims. Their barley-screen combines every possible requisite in such a machine: its action is perfect and unailing, and the value of a sample is so greatly enhanced by its complete removal of injured grains, that the small outlay required for a Poysee's screen is a trivial matter in comparison. We are not at all surprised to learn that the invention is meeting with a very great sale among growers of high quality barleys. The portable self-moving steam-engine of Ransomes and Sims is in design and workmanship every way worthy of the reputation of the firm. Their thrashing-machine, as well-known, is peculiar for its adoption of smooth rotatory motions in place of the reciprocity motions common in other machines, ensuring wonderful steadiness and ease in working, and the quality of its performance is surpassed by none. One fact, not so well known, is that a straw-bruising apparatus has been lately added, which, driven by a strap from the machine, as a straw-carrier is, triturates the straw as fast as it falls off the end of the shaker, making a soft and digestible product, quite unlike the hard sharp chaff cut off by the ordinary knife; there being all the difference between partially-disintegrated straw, and straw which is unchanged, but merely severed into short lengths. Why is a practice customary in Spain, almost unheard of in this country?

Ashby and Jeffery's haymakers and chaff-engines are too noted to require any description. Of late this firm has manufactured portable steam-engines of larger power than their original little one and two horse-power; and at Ialington they exhibited an improved eight-horse portable, of first-class make and finish.

For a great variety of articles of wrought-iron, galvanized iron, troughs, barrows, pumps, and shepherd's field-houses, Alfred E. Peirce was a commendable exhibitor.

Nicholson had a new haymaker, with the flyers hung upon the straight main axle, and the wheels of great diameter for crossing furrows with ease; the alteration from the forward to the backward motion simultaneously altering the height of the forks above the ground. There is simplicity of parts and lightness of framing in this brushing-up of an old idea, the disadvantage being a greater drag upon the horse's back.

We must not forget to name the reaping and mowing machines of Samuelson, as prominent in one part of the gallery.

Le Butt's haymaker is a strong good tool, and a useful article on his stand was a rest for holding a reaping-machine knife during the process of sharpening.

For something extraordinary in cheapness, take Kinsey's fixed steam-engine of 3-horse power for five-and-twenty pounds.

Coleman and Morton's oilcake-cutter is a machine to take the fancy, and a very valuable tool it is, saving a vast deal of waste.

Clay's cultivator is one of the strongest; the backward raising of the tines being the right movement, very easily managed; and his horse-hoe, expanded or contracted, without stopping the horse, gives a facility not found—so far as we know—in any other.

There were three novelties about which a great deal more should be said than we can compress into this report, namely, the French Hogan gas-engine, exhibited by Casper, of Cannon-street, the tube-well shown by Norton, of Bell Sauvage Yard, and another American "notion," the dove-tailing machine, exhibited by Thomas Robinson, of Cannon-street. This bare mention must here suffice; but an outline of the inventions and their application shall be given hereafter.

THE DOWN-STAIRS DEPARTMENT.

ROBEY AND CO., Lincoln.—Six and 8-horse portable steam engines, agricultural steam boiler, thrashing and dressing machine, straw elevator, corn grinding mill, and patent rice mill.

WALLIS, HASLAM, AND STEVENS, Basingstoke.—Eight-horse portable steam engine, 54-inch combined thrashing machine, 4-horse colonial thrashing machine, corn dressing machine, lever and screw drilling machines, set of patent harrows, sackholders, patent bearings, and spring hangers.

GARRETT AND SONS, Leiston Works, Suffolk.—Eight-horse agricultural locomotive steam engine, improved "contractors" portable steam engine, combined single and double thrashing and dressing machines, corn and seed drills, Chamber's broadcast manure distributor, lever horse hoes, stack and grain ventilators, and improved mills for grinding corn, coprolites, &c.

HORNBY AND SONS, Grantham.—Eight-horse power portable steam engine, steam thrashing and finishing machines, five reaping machines (side and back delivery), universal harvesters with oak and iron frames, paragon simple and combined mowers, Plymouth simple and combined mowers and reapers, turnip cutters, root pulpers, corn and seed drills, and a variety of "Champion" wrought iron ploughs.

TASKER AND SONS, Andover.—Ten-horse power portable double-cylinder steam engine, combined treble blast finishing thrashing machine, and two sizes of corn dressing machines.

BURRELL, Thetford.—Ten-horse power single-cylinder traction engine, and improved straw elevator for the harvest field.

TUXFORD AND SONS, Boston.—Ten-horse power patent housed portable steam engine with two cylinders; one, two, three, four, and ten-horse power improved portable steam engines, with horizontal cylinders; combined thrashing, shaking, dressing, and finishing machines for four and eight-horse power engines; patent straw stacker, with feed table and 28-feet spout; circular-saw table, centrifugal pumps for discharging 350 and 1,400 gallons per minute, and grinding mills.

NALDER AND NALDER, Wantage.—A combined finishing thrashing machine, and sample of a patent machine-made screen for thrashing machines.

POWLER AND CO., Leeds.—Fourteen-horse power double-cylinder ploughing engine with windlass attached, ten-horse power traction engine, four-horse power furrow plough, and seven-horse power Tyne cultivator.

ALLCHIN AND SON, Northampton.—Eight-horse power steel boiler portable steam engine, 3-horse power portable steam engine and set of six screw-jacks for engines and machines.

DAVEY, PAXMAN AND DAVEY, Colchester.—Fixed 4-horse power horizontal steam engine, steam thrashing machine with corn drying apparatus, and improved combined clod crusher and dibbler.

CLETON, SHUTTLEWORTH, AND CO., Lincoln.—Eight-horse power single-cylinder portable steam engine, 12-horse power double-cylinder portable steam engine, 10-horse power horizontal fixed engine, 6-horse power portable engine, 10-horse power double-cylinder traction engine, for steam cultivation; (new implement) 12-horse power steam engine, specially adapted for drawing heavy loads; portable steam engine mounted for use as a fixture, 10-horse power portable engine and centrifugal pump for raising 114,000 gallons per hour, portable elevator, iron frame corn mill, flour dressing machine, two sizes of saw-bench and boring apparatus, double-action liquid manure pump; and (new implement), Gillyatt's patent two-row combined liquid manure and turnip drill, fitted with drop motion for mangel wurzel.

UNDERHILL, Newport.—Six-horse power patent traction and steam-cultivating engine, pair of improved winding drums and steel cultivator, six-horse power finishing thrashing machine, corn elevator, horse rake, and Sketchley's universal joiner.

BARROWS AND CARMICHAEL, Banbury.—Portable steam-ploughing engine, with two cylinders; grist mills, for horse and steam power; lever and screw lifting jacks, and India rubber and leather driving bands, of various length and width.

BROWN AND MAY, Devizes.—Three-and-a-half and eight-horse portable steam engines.

HOWARD, J. AND F., Bedford.—Set of patent steam-cultivating apparatus, ten-horse power patent-safety boiler and superheater; a variety of one and two-wheel patent ploughs, for every description of soil; ridging and potato ploughs, plough sledge, sets of three and four-beam harrows and whippetrees, patent flexible harrow horse rakes, haymaking machines, one and two-horse self-delivery reaping machines, and a two-horse mowing machine.

HOLMES AND SON, Norwich.—Eight-horse power portable steam engine, single and combined winnowing and finishing thrashing machines, corn-dressing machines, barley hummer, lever corn, seed, and manure drills, manure distributors, seed shellers, saw table, and rotary harrow or twitch extirpator.

THE BEVERLEY IRON AND WAGON CO., Beverley.—Three-horse reaping machine, with double self-acting swathe delivery; Newcastle, Leeds, and Plymouth one and two-horse carts and waggon, with harvest shelving and ladders; liquid manure and water carts, portable pumps, and apparatus, with hose complete; bone mill, with one and two pairs of rollers; field rollers and clod crushers, sets of patent wheels and axles for carts and waggon; portable farm railway, with side and end tipping truck; Archimedian root washer, patent pig troughs, one-horse reaping machine, with manual delivery, and two-horse grass-mowing machine.

RANSOMES AND SIMS, Ipswich.—Eight-horse power portable steam engine, with wood-road wheels; eight-horse power self-moving steam engine, double-blast steam finishing thrashing machines, patent corn and barley screens, light, general, strong, one and two-horse and pony ploughs; ridging and patent turnwrest ploughs, six sizes of Biddell's patent oat, bean, oilcake, and combined mills; two-horse gear, with in-

termediate motion, Gardner's turnip cutters, root pulpers, for hand and horse power; chaff and corn cutters, and oilcake breaker.

AVYLLING AND PORTER, Rochester.—Eight and ten-horse power patent agricultural locomotive engines; patent travelling rope-porter for steam-cultivation.

TURNER, E. R. AND F., Ipswich.—Four, six, and eight-horse power portable steam engines; ten-horse power horizontal fixed steam engine; thrashing machine to finish corn for market; several sizes of combined crushing mills for seed, malt, oats, beans, and barley; grinding mills and oilcake breakers for beasts and sheep; chaff cutters, to cut various lengths; horse-gear for one or two horses, with intermediate motion; circular-saw benches; and new patent mowing machine.

ASHBY AND JEFFREY, Stamford.—Improved five and eight-horse power portable steam engines; hand, horse, and steam power chaff cutters, on wrought iron frames; Palmerston hay maker; horse and hand rakes; oat and bean mills; oilcake breakers, with single and double-action; root pulper, chain harrow, Gardner's turnip cutter, one-horse gear, small roller mill for crushing oats, and double grist grinding mill.

THE READING IRON WORKS, Reading.—Sixteen-horse power double-cylinder portable steam engine; three, six, eight, and twelve-horse power single-cylinder; twelve-horse power patent Corliss valve steam engine; four, six, eight, and twelve-horse power horizontal fixed steam engines; combined thrashing and finishing machine; stone grinding mill; the patent clipper mowing machines; hay making machine; improved horse-rake; circular-saw benches, with boring apparatus; gorse bruising machines; oilcake breakers for hand, horse, and steam power; improved chaff cutters of various power; portable thrashing machine for horses; grain crushing mill, broadcast seed machine, and patent sack cart and holder.

EDDINGTON, A. AND W., Chelmsford.—Ten-horse power portable steam engine; samples of india-rubber and gutta-percha driving bands; specimens of patent leather belts, of various widths; and samples of patent leather thongs.

MARSHALL, SONS, AND CO., Gainsborough.—Five and eight-horse portable steam engine; three-horse vertical steam engine and boiler combined; combined finishing thrashing machines, suitable for five, seven, or eight-horse power engines; and three sizes of circular-saw bench, with 24, 30, and 42-inch saw complete.

GIBBONS, P. AND H. P., Wantage, Berkshire.—Portable combined thrashing machine to prepare the grain for market.

WIMBURST AND CO., London.—Chaplin's patent four-horse power moveable steam engine and thrashing machine, adapted for various purposes.

CROSSKILL AND SONS, Beverley.—Two clod crushers, improved rollers; light and strong pony, horse, and harvest carts and waggon; liquid manure cart; portable pump; Bell's three-horse reaping machine; single and double-roller bone mill; portable farm railway, with side and end tipping trucks and turntable; improved fixture and circular pig troughs; and Archimedian root washer.

TYE, Lincoln.—Mill fitted with 2 pair of 3 ft. 6 in. French stones; and patent single mill with 3 ft. stones.

THE GALLERIES.

COULTAS, Spittlegate, Grantham.—General purpose, corn, turnip, mangold, and liquid manure drills, small seed and ryegrass drills, and manure distributor.

BRABY AND CO., London.—Iron tanks, roofing felts; cat's pig, and sheep troughs; "magic basin;" and perforated zinc for sieves and sifters.

HARDING, Wincanton.—Specimens and packets of Harding's horse and cattle farinaceous food.

MASON, Ipswich.—Portable boiler and combined boiler and registered steamer, and sample of hand-drills.

MASON, Ipswich.—Portable boiler and registered steamer, and one dozen hand-drills.

PIERCE, London.—Samples of painted and galvanised cattle, sheep, and pig troughs; sheep cages or hay racks, shovels, and barrows; pumps, garden engines, dipping apparatus, steaming apparatus, and fire extinguishers; piggeries, fowl-house, and shepherd's-house or granary; flour and corn bins; a variety of stable and field buckets, water cans, manure bowls, milk-

pans, corn servers, ladders, and other farmyard and dairy requisites.

PENNY AND Co. (Limited), Lincoln.—Patent adjustable and rotary corn separators; improved malt, lime, sand, and coal screens; rolls of galvanised game or poultry netting, woven wire, and flour-dressing machine wire; and set of Goucher's malleable iron beater plates.

GIBBS AND Co., Half-Moon Street, Piccadilly.—Large collections of dried specimens of permanent grasses; collection of English and foreign wheats, barleys, and oats, &c., in the ear; several hundred samples of agricultural seeds, permanent grasses, clovers, and kitchen garden seeds; and a collection of agricultural roots, including Gibbs' new yellow globe mangold wurtzel, swedes, turnips, carrots, parsnips, kohlrabi, and cattle cabbages.

ARNOLD AND SONS, London.—An extensive assortment of instruments and necessities for veterinary practice and farm service.

WHEELER AND SON, Gloucester.—Collection of seeds and roots.

TREE AND Co., London.—A variety of market and cattle gages, beam and telescope drawing levels, garden thermometers, and horse standard.

GIBBS AND Co., Down Street Piccadilly.—General collection of agricultural roots and dried grasses, and samples of wheat, barley, oats, and agricultural seeds.

UNITED, London.—Model of 30-lard rick-cloth; samples of plain and coloured waterproof and other cloths for carts, waggon, and general purposes; assortment of various-sized corn sacks, nosebags, horse-cloths, head-stalls, and reins; sample of anti-friction grease; and netting for fruit trees and sheep.

WRIGHT AND SON, Great Bentley.—Grass specimens and seed, and agricultural roots and seed.

PAGET, London.—An assortment of hay, rick, waggon, and horse cloths and rugs; head-halters, reins, and nosebags; corn, coal, potato, and other sacks; samples of patent wheel-grease and sack tyers; suits of horse clothing; and models of marquees, tents, and rick-cloths.

RAYBURN, CALDECOTT, BAWTREE, DOWLING, AND Co. (Limited), Basingstoke.—Collection of agricultural seeds, corn, and roots, and samples of oilcakes, feeding stuffs, and manures.

ALWAY, London.—A varied assortment of utensils and necessities for all purposes connected with dairy management and milkmen.

BROWN, London.—Samples of the improved patent steel spring lever oil feeders; and samples of the improved needle lubricator.

DAVEY, London.—Non-freezing cocks.

DUFFIELD, SEN., London.—Specimens of barrel, box, and plunge churns, in various sizes, to make from ¼-lb. to 25lbs.; and a variety of butter moulds, tablets, and stamps for marking dairy produce, agricultural implements, &c.

SFRATT & Co., London.—Samples of fibrous prairie dog biscuits and poultry feed.

HERBERT, London.—An assortment of weighing machines, scales, and weights; counter for dairy and other use; corn and seed measures, sack hand-barrows, steelyards, and spring balances.

THE ATMOSPHERIC CHURN COMPANY (LIMITED), London.—Variety of different sized churns, and assorted samples of dairy utensils.

SILVESTER, London.—Patent scales for weighing sheep or pigs, dead or alive, and patent nose-ring for bulls.

VAN STAUF, Margate.—Patent weighing scales, marking brands for sheep or sack cloths, and patent cement.

WHITE & Co., London.—Specimens of patent oil feeders for applying oil to steam-engines and agricultural machines; specimens of artificial "dam" for calves, lambs, and pigs; samples of lubricating grease and lubricators; coils of condensed leather driving bands and lathe bands.

STONE, London.—Scales for weighing poultry and sheep, pruning knives and scissors, sheep shears, and horse-clipping scissors.

TILBURY & Co., London.—Various specimens of pressure, and water gauges for steam boilers and tanks; and improved portable weighing scales for live or dead sheep and agricultural produce generally, up to 500lbs.

TWIGG, London.—Specimens of sheep marks in metal, figures and letters for marking sacks and cloths, and stamps for marking fowls and branding cattle and tools.

TOPHAM, London.—An assortment of brushes for cleaning out tubes of boilers and engine boilers.

JONES, Gloucester.—Gloucester specific for foot-rot in sheep, and composition for waterproofing and preserving all descriptions of leather.

GRANT, Edinburgh.—Agricultural books, *Journal of Agriculture*, &c.

ALLNUTT, London.—Collection of books upon agriculture, models, barometers and thermometers, wheat diagrams to denote the weekly and yearly price averages, and copies of the *Estates Gazette* newspaper.

LATTON, E. and C., London.—Copies of the *Farmer*, "*Farmer's Almanack*," and *Journal of Agriculture*.

LAWLER, London.—Improved box churn in sizes to make from 4 to 12lbs., turnip pulpers, asphalted roof fence, machines for poultry feeding, poultry troughs, samples of wire netting, and an assortment of patent lubricators and oil feeders.

ROBINS, London.—Five sizes of the Victoria garden syringe.

NYE and Co., London.—Small horizontal steam engine, and small oscillating steam engine, suitable for chaff-cutters or similar implements; machine to crush bones for poultry, small mill to grind wheat, and mill to break barley and other grain for poultry.

M'NEILL and Co., London.—Asphalted roofing felt, inodorous bituminous felt for lining walls, dry hair felt for covering steam boilers used in agriculture, and numerous models showing the application of the roofing.

MITCHELL and BURGESS, Manchester.—Emery files in dozens, portable stand and machine for sharpening reaper knives, and machine for sharpening chaff-cutters.

MOORE, London.—Samples in dozens of gauge glasses for high and low pressure steam boilers, pressure gauges and water gauge fittings, and improved weighing machine.

NEWTON, London.—Samples of superphosphates, nitrophosphate, blood, fur waste, wool waste, and hair waste manures; with other small articles in connection with artificial manures.

IMPEY, Bath.—Specimens of improved yellow globe mangel wurzel and Danger's eclipse swedes, with seeds of both in bottles.

LYON, London.—Machines for pulping roots and vegetables for horses and cattle, meat or biscuits for hounds, and vegetables for poultry.

CARTER, London.—Collections of dried natural grasses, mixed grass seeds, agricultural and garden seeds, and agricultural roots; samples of English wheats, barleys, oats, rye, flax, &c.; and a collection of pots showing the growth of grass seeds.

EDGINGTON, B., Southwark.—An assortment of rick, waggon, hay, and horse cloths of various sizes; sheep, poultry, and rabbit netting; assortment of sacks and bags; samples of paraffin cart grease and tallow, mineral engine oil, patent and tarred netting for garden purposes; and model of marquee for agricultural shows.

HOGG and WOOD, Coldstream, N. B.—Collection of agricultural roots—turnips, mangels, carrots, &c.

OWENS and Co., London.—Cassibury fire extinguisher, Townsend's pail extinguisher, Holman's double-barrel farm fire engine, Bernay's patent centrifugal pump, two sizes of improved hydraulic rams, single and double action pumps in great variety, wrought-iron portable liquid manure pumps, and brass lift pumps; collection of brass hose, unions, and delivery hose pipes; pulley blocks for rope and chain, and model hydraulic ram, water wheel, &c.

SUTTON and SONS, Reading.—Collection of agricultural grasses for permanent pasture; collection of the most serviceable varieties of forage plants; collection of seeds in pots, showing their germinating properties; and large selection of agricultural roots—Sutton's selected mangels, swedes, turnips, kohlrabi, carrots, &c.

EDGINGTON, F., Old Kent Road, London.—Tarpaulin and canvas waggon covers, woollen and waterproof horse-cloths and cart-aprons; India-rubber, gutta-percha, and leather driving bands of various lengths; sheep-folding netting; samples of Peruvian guano, nitrate of soda, sulphate of ammonia, superphosphate, and fish and blood manures; samples of wheel-grease and engine oil; flour, corn, and bran sacks.

HARDON, Manchester.—Samples of "*Hardon's Royal patent cake*," and the "*original condimental food*."

THE ST. PANCRAZ IRON WORK COMPANY, London.—

Wrought iron stall, stable, and loose-box divisions; enamelled mangers and water-troughs, with wrought iron racks for sills and stalls; specimens of stable paving-bricks and tiles; samples of yellow deal boarding for stalls and box divisions; sets of patent brackets for single and double harness and saddles; improved iron fittings for cow stalls and piggeries; collection of collar-bar sheep, cattle, and ox hurdles; and wrought iron wicket and field gates.

HANCOCK, J. and F., Dudley.—An assortment of various sized butter machines; domestic presses, and specimens of new patent cart-wheel.

CULLINGFORD, Stratford.—Cocoa-nut and hemp net of various length and mesh for sheep, lamb, rabbit, and batfolding; bird and rabbit traps; galvanized wire net, and waggon rope 50 yards long.

WEIR, London.—Chaff-cutting machines, bean mills; cake, oat, pea, and malt crushers; patent box churns, set of dairy utensils, and set of Slater's patent butter-carrying apparatus.

TINKLER, Penrith.—Four sizes of patent churn, to make from 1 to 30lbs. of butter.

READ, London.—Garden watering engines, lever pail engines, suction pumps; green-house and garden syringes, and an assortment of veterinary instruments and requisites.

BURNEY AND CO., Millwall.—Wrought iron cart-bodies for water or liquid manures; wrought iron and galvanized iron cisterns and cattle-troughs, to hold up to 400 gallons; strong one and two quarter corn bins; galvanized tank for baths; trough on wheels, and counter oil-tank.

COTTAM AND CO., London.—Registered ventilating loose-box, and two and three hole stall fittings complete; saddle and harness brackets; one, two, and three sack corn-bins; samples of surface drain, horse-pot, and tee piece; models of stable and cow fittings, and effluvium traps; and set of cow fittings for two cows.

BOBY, Bury St. Edmund's.—Two patent haymakers, corn screens, with Gretton and Abbott's adaptor, with the addition of an apparatus for removing the broken kernels of barley; corn-dressing machine; barley haviour; patent oval beam iron ploughs; improved wooden beam plough, and set of patent plough wheels.

LYOYD AND SON, London.—Six sizes of flour mill and dressing machine; improved corn crushers, corn grinding mills, bean splitters, drug mills for grinding seeds for cattle medicine, and flour mill for grinding only.

BROWN AND CO., London.—Ten patent lawn mowers, with 10 to 30 inch cutters, of varied power; improved chaff-cutting machines to be worked by man or boy; improved portable platform weighing machine; premium wire-netting and iron fencing; galvanized strand wire; light and strong continuous round bar fence; wrought iron hurdles, and field or wicket gates, and cast iron pillars for gates to hang and close on.

HAYWARD, TYLER, AND CO., London.—One-and-a-half-horse vertical steam-engine and boiler; powerful California farm fire-engine or liquid manure distributor; California double-acting barrel and barrow pump; cottage, force, and other pumps; india-rubber hose in lengths; galvanised sheet-iron liquid manure pumps and garden engines; small strong horse-wheel; and well-frame for deep wells.

BOYD AND CO., London.—Sample lengths of continuous round and flat fence for sheep and cattle; samples of sheep and cattle hurdles of varied strength, plain and ornamental; iron field and wicket gates, with self-fixing cast-iron pillars; thirty-four gallon cask of prepared black varnish; four patent brush and quadrant lawn mowers, to cut from 14 to 22 inches; and an assortment of pig troughs and corn bins.

AGRICULTURAL AND HORTICULTURAL ASSOCIATION (LIMITED), Manchester.—Wrought-iron farm-hurdles for sheep and cattle; continuous iron-bar fences; machine-made wire netting and fences for horses, cattle, sheep, poultry, and rabbits; ornamental garden fence; single and double pig and poultry troughs; and samples of iron-wire rope.

CASPER, London.—One-horse gas engine.

STACKEY AND SONS, Uxbridge.—An assortment of chaff-cutters for hand and horse power.

GRANTHAM, Peterborough.—Dressing and blowing machine and weighing machine.

BONNALL, HEMPSTEAD, AND CO., Grantham.—Two of Slater's patent churns.

HODGSON, Louth.—Set of duck-foot harrows, ten bundles

of steel hay forks, collection of hand tools, and set of draining tools.

DRIFFIELD AND EAST RIDING PURE LINED CAKE COMPANY (LIMITED), Great Driffield.—Samples of lined cake.

BEACH, Dudley and Tipton.—Beach's condiment for horses; farinaceous food for cows, calves, sheep, and pigs; superfine flour; and collection of roots.

SMITH, London.—Several sizes of moveable letters to slide in frames for branding cattle horns and tools; metal marks for sheep; stamps for dating and marking fowls, &c.; and figures for branding ricks, cloths, tents, sacks, sample bags, &c.

BAGSHAW, Belstead.—Three staffed sheep for the purpose of showing the cure of scab and foot-rot by one dressing; and samples of the dressing used.

DAVIS, London.—Samples of new cattle food and compressed fodder.

WADE, Leeds.—Two Yorkshire patent barrel churns, to make from 2 to 24 lbs. of butter.

KITTMER, Fulstow, Lincoln.—Corn-dressing and blowing machines.

AMIES, BARFORD, AND CO., Peterborough.—Improved metal corn-grinding machines, portable farmers' steaming apparatus, and boilers; Bury prize oilcake mills; and water-ballast field, park, and garden rollers.

BURGESS AND KEY, London.—Reaping machines with swathe, sheaf, and back delivery; combined reaper and mower and mowing machine.

SALMON, Bermondsey.—Samples of various manures.

SMITH, Kettering.—The Paris prize medal and other horse-hoes, improved winnowing and blowing machines, and an assortment of patent scrapers for Samuelson's self-raking reaping machines.

NICHOLSON, Newark.—Nine sizes of haymaking machines, horse-rakes with steel teeth, garden rollers, sack-lifting and weighing machines, winnowing machines, corn elevator, and five cake mills.

SAMUELSON AND CO., Banbury.—Self-raking and one-horse reapers, with swathe delivery; grass-mowers and combined reaper and mower; single and double-action turnip cutters, chaff cutters, and lawn mowers, to cut from 14 to 22 inches.

WILKINSON AND SON, Ely.—Patent lever regulating horse-hoe for uneven land.

HUNT, London.—Improved turnip cutter, spiral wire tube brush for cleaning boilers, pocket scales for weighing farm produce, and shears for sheep-shearing.

GOUCHER, Workop.—Sets of eight improved patent prize beater plates, sets of three drum-ends, and model of a four-horse thrashing machine.

HARE AND CO., London.—Collection of composite bowls and basins, for water, feeding poultry, dogs, &c.

RANSOME AND CO., London.—Weston's patent differential pulleys, rope blocks, hauling and lifting jacks, spanners for agricultural purposes, gauges for portable and stationary engines, Rosere's patent lubricator, patent fire-bars, farm-cottages, and liquid manure pumps; Barford's patent "annular" boiler; hand trucks, corn and flour bins, Long's "Specific," and specimens of fleeces, and rotary chopping machine.

FRIEST AND WOOLNUGH, Kingston-on-Thames.—Nine, eleven, and thirteen-row Norfolk and Suffolk drills; turnip, manure, general-purpose, and grass-seed drills; and lever horse hoes for light, heavy, and mixed land.

BENTALL, Maldon.—An assortment of patent chaff-cutters of various power, patent root pulpers and slicers; Gardner's single and double-action turnip-cutters; improved oilcake mills; corn and seed crushers; oat, bean, and Indian corn kibblers; and horse gear with intermediate and double motion.

SHEEN, Aylesbury.—Assortment of large and small chaff-cutters, and iron plough, with wooden mouldboard.

MAYNARD, Cambridge.—Patent portable steam-power lifting chaff engine.

RAY, MEAD, AND CO., London.—Two-and-a-half-horse power horizontal engine, boiler and stand complete; four and eight bushel corn bins; fifty and one hundred gallon galvanised water cisterns; iron wheelbarrows, and 30 gallon water carrier.

JAMES, Cheltenham.—Liquid manure or water carts, with pumps and suction pipes; assortment of gapping drills; Cheltenham garden engine and patent clod-crusher.

LAW AND SONS, Leicester.—One and five-horse power horizontal steam engines; clay mill, for horse or steam power, and saw table.

SMITH, Ipswich.—Newly improved horse rakes, fitted with patent cultivator; sets of three four-beam harrows, and model of corn-drying machine.

REYNOLDS, London.—Poultry fences of various patterns and mesh; poultry, game, and sheep galvanized iron netting; hard wire rat-proof lattice, and patent seed protectors.

SWEETSER, Islington.—Saw-bench to take 30-inch saw, steam joiner for sawing and morticing, and hand-morticing machine.

CARSON AND TOONE, Warminster.—An assortment of chaff-cutting engines, Moody's patent turnip cutters, oilcake crushers, prime horse hoes, single cheese press, and two-horse gear.

WHITMAN AND CO., Clerkenwell.—Oat crushers and bean mills, corn crushers to crush from 3 to 30 bushels an hour, domestic flour mills, steel corn grinding mills, malt and linseed crushers, and iron frame corn-mills.

HILL AND SMITH, Brierly Hill.—Sample lengths of patent sheep, cattle, and ox fence; assortment of flat and round bar hardies; wrought-iron field and entrance gates, posts, and pillars; wrought-iron and galvanized sheep racks, troughs, and barrows; patent rotary gravel screen, and assortment of japanned and galvanized wire netting.

GRAZY, Southwark.—Patent portable railway and turntable, root and manure waggons, and end and side-tip earth waggons.

BRYAN CORCORAN AND CO., London.—An assortment of French runner millstones and bedstones, combined smut or wheat-cleaning and separating machines, mahogany flour cylinder, sets of corn measures, stone-staff and stone-proof mill-bills, specimens of woven wire, Francis' seed-cleaning machine; shovels, sieves, sack trucks, and samples of leather belting.

MCKAY, Southwark.—Specimens of condensed and water-proof leather or hide, for driving bands, in coils of various lengths and width, suitable for agricultural harness, lashing laces, and thongs.

PERNE, Braintree.—Four sizes of improved root graters, double-action oilcake breaker, hand-power chaff cutters, and cloverseed, manure, and general purpose drills.

SMITH AND SON, Peasenhall.—An assortment of corn, seed, turnip, and manure and general purpose drills.

DAY, SON, AND HEWITT, London.—Stock breeders' complete medicine chests, with "Key to Farriery," chests of "Chemical Extract," for wounds and sore udders in lambing; chests of "Gaseous Fluid," for colic and gripes in horses, and diarrhoea and debility in sheep and lambs; chest of "Red Drench" or inflammation powders; chest of "Red Paste," or condition balls for horses; tin case of "Blister Ointment," for horses; tin case of "Aluminate of Zinc," for foot disease in sheep and cattle; tin case of "Sulphuretted Extract," for scab, mange, and itch in sheep, horses, and pigs; large and small editions of the "Key to Farriery"; copies of a lecture of "The Breeding and Management of Sheep," and copies of prize essay on "The Rearing of Calves."

JOHNSTON, London.—An assortment of churns, to make from 1 to 30 lbs. of butter; and cases of butter presses, forcers, knives, and beaters.

DAY AND SONS, Charrington.—Six sizes of cattle medicine chests, bottles of purified Driffield oils, condition draughts, drenches, white and foot-rot oils, and horse powders.

CLAY, Wakefield.—Patent prize cultivator, horse hoe, with chain harrow, and self-expanding chain harrow.

HUMPHRIES, Walton-on-Thames.—Improved pump frames, with double-action pump, for deep wells and portable purposes; double-bucket continuous action pump, for drainage works, and lift and force manure pump.

HOLGATE AND CO., London.—Leather mill bands, hose pipes, and buckets.

WORSAM, JUN., Chelsea.—Patent general joiner, saw-bench, and saw-sharpening machine.

HART, London.—Machines for weighing sheep and pigs, wool, casks of manure, and general articles; and saw bench.

THE GUTTA PERCHA CO., London.—Forty gutta percha bands, various widths and thicknesses, for agricultural machines; coils of tubing, cattle and sheep probangs, liquid measures, stable buckets, funnels, syphons, and watering cans and carbons.

DIX, Westerham.—Two iron hoes.

DIXON, SQUIRE, AND CO., London.—Specimens of Bourdon steam pressure and vacuum gauges, and diaphragm steam gauges and indicators.

DENTON, Wolverhampton.—Assortment of chain harrows, and adjustable harrows on wheels.

COTTIS & SONS, Epping.—Three paragon chaff cutters, to cut one and two lengths; expanding and rigid horse hoes, improved corn-dressing machine, and iron sack trucks.

BURCHFIELD & SON, London.—Inverted weighing machines of new pattern, chaff machines for power, and hay and cattle weighing machines.

BAKER, Newbury, Berks.—180-gallon liquid manure cart with stirrer, pump, &c.; and 180-gallon water cart, with pump and hose.

CORRETT, Wellington, Salop.—Patent grinding mill for hand and power, root pulpers for hand and power, and prize oilcake breaker.

CORRETT, Shrewsbury.—Bury St. Edmund's "Eclipse" corn-dressing machine, and new pattern blowing and screening machine.

REEVES, R. & J., Westbury.—Variety of Chandler's and other liquid manure and seed drills; corn dressing machine; and improved water carts, barrow pumps, and manure distributor.

HALL, Westbury.—Specimens of Westbury-grown swedes, mangel-wurzels, carrots, and turnips.

RICHER, Norwich.—New invented corn screen for cleaning grain, and hand power splitting and crushing mills for men or horse power.

TAYLOR & CO., London Bridge.—Four sizes of chaff cutting machines, oat and bean crushing mills, grindstones, pulpers and strippers, oilcake breakers, double-action turnip cutter, corn bins, improved portable boiler, American box churns, Californian pums, corn dressing machines, and sack trucks.

HAYES AND SONS, Stamford.—Royal Agricultural Society Plymouth first prize one and two-horse carts and waggons.

THE TRUSTEES OF RICHES AND WATTS, Norwich.—Two original pattern American grist mill; and improved and new pattern mills, on carriage and elevators, of different sizes.

LE BUTT, Bury St. Edmund's.—"Champion" single and double-action hay-making machines; "Eclipse" and American horse rakes; everlasting malt and gravel screens; and iron stand or rest for holding mowing machine knife during the process of sharpening.

MORTON & CO. (Limited), Liverpool.—Collection of models and drawings illustrative of the application of iron roofing for agricultural purposes; drawings and specimens of park and farm fencing and gates; and models of iron buildings, hay barns, stores, &c.

HAWKES AND SPENCER, Tiverton.—Five-row Kent drill, and eleven and thirteen-coulter patent chain corn drill.

DRANE, J. & A., London Bridge.—An assortment of farm and van harness, nosebags, and horse cloths, and stable requisites generally; corn bins of various sizes, wagon and cart jacks, mangers, bruising mills, and chaff cutters, and sets of stable tools.

SAWNEY, Beverley.—Improved royal prize winnowing machine; sheep racks for hay, corn, turnips, &c.; improved sack lifter, and improved treadle grindstone.

WEDLAKE, Horncchurch and Romford.—Three-horse power portable steam-engine; thrashing machine; and, two, three, and four-horse adjustable intermediates; one and two-horse safety gear, and one-horse spur gear; patent hay machine, horse rake, chaff cutter, portable corn mill, and circular-saw bench and augers.

CAMBRIDGE & CO., Bristol.—Improved Cambridge and notched wheel rollers of various diameter; improved chain and combined time and chain harrows; sets of four-beam "Excelaior" time harrows; improved winnowing machines; Gardner's single and double-action turnip cutters; one and two-horse gear and intermediate motion; two and three wheel land presses; and improved horse rakes.

SMITH AND GRACE, Thrapston.—Chaff cutters, grist mills, and bean mills.

DELL, London.—French burr and small model millstones; samples of various qualities of burrs; new and improved smut machines, wheat cleaners, and flour dressing machines; portable mill, with pair of 3-feet French millstones; miller's scale with steel beam; agricultural vice bench; improved

sack lifter, and sack-barrows; set of Bradshaw's patent centro irons, and set of corn measures; rolls of woven wire; lifting jacks, pulley blocks, provers, staffs, driving belts, lubricators, chisels, webbing, buckets, and other mill requisites.

HOBBS, Basingstoke. — Improved oilcake, grinding, and bean mills; sack elevator and barrow; liquid manure pump, sheep racks, lifting jack, and strong iron barrow.

HENRY KINSEY, Nottingham. — Two-horse power combined horizontal engine and boiler; three-horse power horizontal engine; four-horse power horizontal tank engine; and four-horse power vertical combined engine and boiler.

BALL AND SON, Rothwell, Northamptonshire. — One and two-horse Plymouth prize carts and waggons; prize ploughs with steel breast; improved seven-tined lawn scarifier; set of general purpose iron harrows, and improved lever horse rake.

ROLLINS, London. — American spring-tooth wheel horse rake; cast-steel ploughs; American churns, grindstone, and broadcast sower; bundles of hay and manure forks, spades, hay rakes, scythe sticks, and garden tools; sack weighing machines; cast-steel axes, and bullock yokes; an assortment of well, domestic, force, and other pumps; seven American hydraulic rams, and two cases of Nova Scotia scythe stones.

NORTON, London. — Four-horse power vertical steam engine; six-horse power horizontal steam engine; four patent American tube wells and pumps; and patent corn and grain-drying machines.

WOOD, London. — One and two-horse Royal first prize grass-mowing machines; first prize one-horse reaping machine; first prize mowing machine, with reaping attachment, and grindstone mowing machine knives.

HUNT, Earls Colne. — Prize clover and trefoil seed-drawing machine; Brenton's two-horse reaper, with back and side-delivery; one and two-horse gear, complete; corn dressing machine; Gardner's single and double-action turnip cutters; hand power and double-action cake mills; hand and horse power pulpers; disc grater, and Moody's turnip cutter.

PAGE AND CO., Bedford. — Patent draining pipe and tile machine; two and three-knife chaff cutting machines, for hand, horse, and steam power; adjustable sliding knife root pulpers; improved turnip cutter; improved linseed cake mills; wrought-iron one and two-wheel ploughs with steel breast; sets of improved diagonal and drag harrows; and galvanized wrought-iron sheep and pig troughs, of various sizes.

CLAYTON AND CO., London. — Tile-making machine, with dies complete; and semi-dry and ordinary brick presses.

WARNER AND SONS, London. — Large assortment of pumps, for liquid manure, domestic use, and forcing purposes; two Crystal Palace fire engines or forcing pumps, fire or garden engines, and swing barrows; collection of syringes, sluice valves, and rubber hose and branch pipes; model of water-wheel and pumps, horse gear frame for pumps, and tank for pumps.

DODGE, London. — An assortment of endless vulcanized India rubber and cotton machine bands for various power steam engines; rolls and coils of vulcanized India-rubber hose, for liquid manure or water delivery; specimens of water-proof India-rubber engine, van and cart covers, assortment of water-proof horse loin and other covers, and specimen of gutta percha driving band.

DOWNING, London. — Four sizes of chaff-cutting machines, turnip cutters, for sheep and beasts; oilcake and oat and bean-crushing mills, portable liquid manure pump and hose, iron corn bin, and set of corn measures, grindstone on frame, butter churns, assortment of forks, shovel, iron buckets, and skeps, and sack-weighting machine, and sack truck.

BRADFORD AND CO., London. — Two-horse power improved vertical steam engine, improved box and mid-feather churns, to make from two to twenty pounds of butter; improved butter-making machine, patent riddling machine, and Tozer's patent hand fire engine and pump.

BOULTON, Norwich. — Two liquid manure carts, to hold 140 and 200 gallons; portable pump on stand, swing water barrows, with pumps; and an assortment of galvanized wire and netting, for birds and game.

POWIS AND CO., Millwall. — Mortising machine, for hand power; mortising, tendonning, and boring machine, combined; band or ribbon sawing machine, and joiners' and self-acting circular saw benches.

FARDON, Leighton Buzzard. — Sheaf-delivery reaper and

mowing machine, combined mower and reaper, eight-row corn and seed drill, heavy and general purpose ploughs, circular-saw bench, horse hoes, Turner's patent corn-grinding mill, and three-tine cultivator.

HUNT AND PICKERING, Leicester. — Improved oilcake breaker, with double roller; chaffcutters, for hand, horse, and steam power; one-horse gear, and intermediate motion, steel-roller corn mills, for power; grass-mowing machine, with reaper; single and double-action turnip cutter, root pulpers and slicers, sack trucks, whippetrees, twitch rakes, and lever cheese press.

RICHMOND AND CHANDLER, Salford. — An assortment of hand, horse, and power chaffcutters, of new pattern, four sizes of corn crushers; one, two, and four-horse gear; an improved steaming apparatus, root washers, turnip cutters, and sack holders.

COLEMAN AND MORTON, Chelmsford. — Patent five and seven-tine cultivators, with side levers; Hanson's patent potato digger; one-horse gear, with intermediate motion; improved water or liquid manure cart, two sizes of patent oilcake cutters, adjustable rotary corn screen, piece of McKenzie's patent sheep fencing, and samples of shares for cultivators.

BAKER, Wisbeach. — Combined blowing and seed-dressing machines, and two pair of elastic patent reaping machine rakes.

BRAGGINS, Banbury. — Park gate framed of oak, and fitted up with iron rods; fieldgate, made of oak, with patent hinges, and sets of patent park and field-gate hinges.

ANNUAL MEETING OF THE SMITHFIELD CLUB.

The annual meeting of the Smithfield Club took place on the Tuesday afternoon in the Club Room at the Agricultural Hall. The chair was taken at one o'clock by the President, General the Hon. A. N. Hood. The attendance was not numerous.

The HON. SECRETARY, Mr. Brandreth Gibbs, read the minutes of the last meeting, which were confirmed.

Mr. GIBBS then read the following Report of the Council: The Council beg to lay before the General Meeting of the Club the Annual Report for the past year. The Council has held four Meetings, which have been well attended. In addition to the ordinary routine business, the following subjects have had their careful consideration.

I. The preparation of the prize-sheet for the present show: It was resolved to omit the second prizes in the classes for the Long-horned breed of Cattle, in consequence of the small number of entries hitherto made in that division.

II. The Council has determined to add in the appendix to the annual prize-sheet a statement of the winners of silver cups and gold medals at all the past shows of the Club. This to be reprinted from the Honorary Secretary's "History of the Club," and to be continued from year to year. A list of the members of the Club will also be added.

III. The Council has determined that there shall be a report on the animals exhibited at the Club's shows. A sum of £15 has been voted for this purpose, and the preparation of the Report of the present show has been entrusted to Mr. H. H. Dixon.

IV. Mr. Samuel Jonas has been elected a member of Council to fill the vacancy occasioned by the appointment of Mr. Torr as a trustee.

V. The Council has to regret the loss the Club has sustained by the deaths of C. T. Tower, Esq., a vice-president and father of the Club, and of the Right Hon. Lord Feversham, also a vice-president. His Grace the Duke of Marlborough and the Right Hon. the Earl of Powis have been elected vice-presidents to fill the vacancies thus occasioned.

VI. As it appeared that by making certain alterations at the Agricultural Hall increased accommodation could be given to the exhibitors of machinery, and that other improvements could be made, a committee was appointed to confer with the directors of the Agricultural Hall Company. After negotiations with the directors the Council agreed to the following alterations and conditions: 1. That the Club shall cede the present pig-hall, with the exception of twenty-five feet wide on the north side. 2. That the Hall Company shall build, to the

satisfaction of the Smithfield Club, a new pig-hall on the south side of the arcade. 3. That the Hall Company shall build a dining-hall over the new hall, and that the Club shall have the free use of it for a dinner on such a day during the Show as the Club shall determine. 4. That the spare space on the north side of the arcade shall (if required) be converted into an additional hall for cattle or pigs. (The Council added certain conditions to the ingress and egress.) 5. That accommodation for the food brought by exhibitors for their animals shall be built by the Agricultural Hall Company to the satisfaction of the Club. 6. That in consideration of the above, the Smithfield Club shall pay to the Agricultural Hall Company £1,000, in order that the galleries may be increased by flooring over the open bays between the columns on the sides of the galleries next the main area of the Show. This increase of the galleries is already made, and the new halls are to be ready by the Show in next year. In giving the above condensed statement of the arrangements made with the Agricultural Hall Company, the Council call attention to the following advantages: 1. By ceding the present pig hall, which has always been found unsuitable to the animals, on account of the difficulty in regulating the temperature, a new hall will be obtained, where this defect will be obviated. 2. The exhibitors also will be provided with a proper store for the food for their animals. 3. A commodious dining-room will be at the disposal of the Club for the anniversary dinner, which no doubt will be far better attended here than when held at an hotel at an inconvenient distance from the Show. 4. By the investment of £1,000 in adding to the galleries a twofold advantage has been gained—first, a general increase of accommodation for the exhibitors of machinery, and, secondly, a considerable increase in the annual income of the Club in the form of rent for this additional space. The new space has been readily taken this year by exhibitors, without the Club having to relax any of its rules in reference to the nature of the articles to be exhibited, and the total amount of rent received at the present Show, for this additional space alone, amounts to £246 0s. 4d.; so that in the course of four years the £1,000 will have been more than repaid, and the Club will enjoy the increased rents of stands for the remainder of the lease, or if regarded as annual income it is equal to upwards of twenty per cent. on the amount expended. It may be named in addition to this that the allotments this year have not gone to the full extent of the measurement, and therefore the rent in succeeding years will be somewhat further increased. The Council therefore considers that this is a very profitable and good way of using a portion of the reserve fund which accrued from surplus annual income some years back.

VII. It being necessary that a licence from the Privy Council should be obtained for holding the show, the President was authorized to sign on behalf of the Club the undertaking required by the local authority in reference to all cattle being killed within the boundaries of the metropolis and within the time prescribed. The Council did not consider it consistent with its duty to make any representation to the Lords of the Privy Council to induce them to relax the general orders in reference to cattle being slaughtered within the prescribed radius, but on the representation of the President ten days after the close of the show has been permitted; and special "police passes" were granted for the animals coming to the Club's show, and which were handed over to the hon. secretary to transmit to exhibitors. Thus great inconvenience and delay has been avoided; as, had the usual mode of obtaining the police pass been enforced, the exhibitors' servants in charge of the animals would on their arrival in London have been obliged to go to the nearest police station to obtain the necessary authority to proceed through London streets. This licence contains the conditions that, in the event of any case of cattle-plague occurring within the exhibition, all the animals in the show shall be killed on the spot. The Council therefore deemed it right to take a guarantee from each exhibitor that the orders of the Privy Council should all be carried out, and that each exhibitor shows at his own risk, and that the Club and its officers are held harmless in reference to compensation if immediate slaughter should unfortunately become necessary. The Council determined to take the same precaution as last year as regards the cleansing and disinfecting of cattle conveyances and the constant attendance of a veterinary staff during the show. The Council having taken into consideration the liability of

cattle-plague being introduced into this country by the admission of foreign animals into our markets, requested the President to hand the following resolutions to the Lord President of the Privy Council as recommendations from the Council of the Smithfield Club: 1. "That all foreign fat stock be slaughtered at the place of landing." 2. "That sheep be included in the present quarantine regulations for store stock."

VIII. The Council have voted their thanks—1, to the Royal Veterinary College, for the arrangements they made, permitting the constant attendance of a veterinary staff; 2, to the Rev. Daniel Wilson, M.A., Vicar of Islington, for having again arranged for a divine service for the herdsmen and shepherds, which was, as usual, extremely well attended; 3, to the lessee of the large refreshment-room, for the use of it for the service; 4, to the proprietors of cattle-conveyances, for the facilities they have afforded.

IX. The Council were anxious that the dinner should take place on the Monday in the show-week; but, as the large room at the Salisbury Hotel was engaged for that night, and as the dinner will, after the present year, take place in the new "Berner's Hall" which is now being built, adjoining the Show, it was not deemed expedient to remove it, for this one occasion, to any other hotel. It will therefore take place, as last year, at the Salisbury Hotel, at six o'clock, on Wednesday. The toast-list has been revised by a committee, and the number of toasts considerably curtailed.

X. The Council has, in conformity with the bye-laws, prepared a house-list of the members whom they recommend to be elected on the Council, in place of those who retire at this meeting by rotation.

XI. The Council lays before the meeting the balance-sheet for the year, up to the 1st of December, duly audited. This shows:

	£	s.	d.
Balances in hand on that date amounting to...	2,485	18	7
The total receipts during the year amount to...	2,983	19	10
The total expenditure, ditto.....	2,911	8	9
Excess in favour of the Club	£72	16	1
Of this, £68 5s. life-composition has to be invested.....	68	5	0
Thus leaving a balance of.....	£4	11	1

At the present time, therefore, the receipts and expenditure as nearly as possible balance. Last year, for the first time, the Club's annual expenditure exceeded the amount received during the year; but it was met without having to sell out any of that portion of the reserve fund which belongs to surplus annual income, saved some years back, and therefore applicable to current expenses when required. The balance this year in favour of the Club, as above stated, is in consequence of the additional rent obtained in the galleries.

XII. In conclusion, the Council congratulates the members on the continued prosperity of the Club, and trusts that the improvements already carried out, and those which are in preparation for next year, will prove important steps towards furthering its future progress.

And the Council has still further to congratulate the Club on having the honour of numbering among the exhibitors at the present show both her Majesty the Queen and his Royal Highness the Prince of Wales.

By order of the Council,

(Signed) B. T. BRANDRETH GIBBS,
Honorary Secretary.

The CHAIRMAN said he wished to remark that, in consequence of his being the President of the Club, it had devolved upon him to see the Lord President of the Council relative to the importation of foreign cattle and the slaughtering of them at the ports of debarkation. The Lord President informed him that the Government intended to submit to Parliament a measure on the subject. What the nature of its contents were he did not know, and he was not aware that any one in that room was acquainted with them. Perhaps Lord Spencer was; but he had not heard of any one having seen the Bill. He thought the Club should take some cognizance of the matter; and he would suggest that in the course of the first ten days in February, just before Parliament assembled, there should be a meeting to consider the provisions of that measure

(cheers). He would now ask some gentleman to move the adoption of the report.

Mr. SENIOR said, being one of the oldest members of the Club, he had great pleasure in moving that the Report be adopted.

Mr. ELLMAN, in seconding the motion, said he was very glad that the Council had taken up the point of the slaughtering of foreign stock at the port of entry, which was a matter of immense importance to all present. He could only hope that something would also be done with regard to the removal of stock. For his own part, he should be much pleased if, when the markets and fairs had been opened, any parties moving diseased stock upon roads or upon land, without the consent of the occupier, were subjected to a penalty for every head of stock so removed (Hear, hear).

The motion was then put and carried.

Mr. W. TORR said he felt great pleasure in proposing as the President for 1899 a nobleman who had interested himself very much in the exhibitions of the Smithfield Club, and had been very often an exhibitor, and whose name stood on the list of Vice-Presidents; he alluded to the Duke of Marlborough (cheers). His Grace had taken a deep interest in the proceedings of the Royal Agricultural Society, in which during ten years of office he had manifested great earnestness and ability in the work of administration; and he had no doubt that the noble Duke would render equal service as the President of that Club.

Mr. FARTHING seconded the motion, which was then put and carried.

On the motion of Mr. BEASLEY, seconded by Mr. SANDAY, the Vice-Presidents were re-elected.

On the motion of Lord TREDEGAR, seconded by Mr. OWEN WALLIS, the trustees were also re-elected.

Mr. MOORE said he had great pleasure in submitting the next name for re-election, it being that of their Honorary Secretary, Mr. Brandreth Gibbs (cheers). He was sure that the feeling of all present was that the Club was very much indebted to Mr. Gibbs for the labours which he had performed on its behalf. He did not know in fact what they would do without him (Hear, hear).

The motion was seconded by Mr. ROBERT SMITH, and adopted.

The CHAIRMAN observed that the meeting had now to elect eight members of the Council, in place of the following gentlemen, who retired by rotation, and were not eligible for re-election till the expiration of the ensuing year: Mr. John Beasley, Mr. B. E. Bennett, Mr. John Clayden, Mr. Walter Farthing, Mr. John Giblett, Mr. William Ladds, Mr. Joseph Shuttlesworth, and Mr. Robert Smith.

The Earl of HARDWICKE said he was called upon, on that occasion, to perform an act of considerable importance—namely, that of proposing eight gentlemen to fill the responsible office of members of the Council of that Society. He regretted to say that, when the list of those names was placed in his hand, he found that he had not the honour of knowing a single gentleman personally; and the consequence was, that he must ask to be excused from voting at all. This was a natural consequence of the misfortune, which in so large a society must attend most of them, of not being intimate with one another. And one of the great evils of the present system was, that it did not permit them to be intimate with one another. If the President and the Council remained in office for a long period, or during good behaviour, the result would be that they would take a deeper interest in the Society, and become better acquainted with its machinery and with its members. That was the first time that he had been called upon to take a practical part in the proceedings of a meeting of that Club; and, being placed in the difficulty which he had mentioned, he was unable to vote. The noble Earl concluded by moving the election of the house-list of candidates for the Council—viz.: J. B. Downing, Holme Lacey, Hereford; James Howard, Bedford; H. W. Keary, Aldenham, Bridgnorth; Robert Leeds, West Laxham, Litcham, Norfolk; Robert Overman, Egmore, Brandon, Norfolk; James Quartly, Molland, South Molton; Joseph Robinson, Clifton Pastures, Newport Pagnel; J. T. Senior, Broughton Pastures, Aylesbury.

Lord TREDEGAR, in seconding the motion, said, his noble friend on his left having declined to vote on the ground which he had mentioned, he felt great pleasure in saying that, having attended the meetings of the Club for some years, he

knew the greater portion of the gentlemen proposed (Hear, hear); and he could vouch for it that five at least out of the number were well qualified for the office.

The election was then proceeded with; and the Chairman announced that there was a majority in favour of the house-list.

The HON. SECRETARY having remarked that several new members had been elected that evening by the Council, and that if any gentleman wished to propose any other member he would be happy to receive the name,

Mr. MOORE said he wished to make one or two remarks in reference to the number of members compared with the number in the Birmingham Society. It was astonishing how very few gentlemen were connected with that Club as subscribers, and, in his opinion, that arose in a great degree from the fact that they did not know that it was desired that they should become members. It struck him that if there were put forth some such document as was issued some time ago by the Royal Agricultural Society, there would be a large accession of members. He was surprised the other day at seeing the list of subscribers to the Birmingham Show; their own list was perfectly insignificant in comparison.

Mr. SMITH, of Exeter, thought that the reason why there was such a large number of subscribers to the Birmingham Show was that a subscriber of a guinea had six tickets sent to him.

The CHAIRMAN said that an arrangement of that kind would not be assented to by the Agricultural Hall Company (Hear, hear), who had agreed to pay that Club £1,000 a year for twenty-one years. He thought that one reason why their funds were in such a prosperous condition was that so many of the members occupied positions of great importance in the country. The Council would, however, be happy to have a larger number of members.

Mr. JOHN BALDWIN said as regarded the Birmingham Show he wished to remark that there was an entrance fee of 10s., and there was also a charge of 10s. for the private view on Saturday. Although six tickets were given for the guinea, he thought the Smithfield Club was on the whole far more liberal than the Birmingham one. (Hear, hear.)

The Earl of HARDWICKE said he had great pleasure in proposing a vote of thanks to the President for his labours during the past year. (Cheers.)

The motion having been carried by acclamation,

The CHAIRMAN said in returning his thanks for the honour conferred upon him by this vote, he could only say that he felt certainly obliged to the Club for having placed him in the honourable position of President. He congratulated the members on having an exceedingly good show. He believed it might be considered one of the best exhibitions that the Club had ever had. (Hear, hear.) With such an able, practical council, and with such a valuable honorary secretary as his friend Mr. Brandreth Gibbs, there was every reason to believe that the society would always maintain its present high position in public estimation. In conclusion, he begged to offer his thanks for the valuable support which he had met with during the past year.

Mr. OWEN WALLIS thought the meeting ought not to separate without passing a vote of thanks to the honorary secretary for the great services which he had rendered to that society. (Cheers.) Having been one of the stewards for three years, he had observed the admirable manner in which the accounts of the Club were kept and all the business transacted, and he was sure they were immensely indebted to Mr. Gibbs.

The motion having been seconded by Mr. TWITCHELL, was passed unanimously.

Mr. BRANDRETH GIBBS said he was much obliged for the vote, and would always be happy to do his best.

The meeting then separated.

THE SMITHFIELD CLUB DINNER.

The annual dinner of the Smithfield Club took place on the Wednesday evening at the Salisbury Hotel, and was attended by about 80 gentlemen, among whom were many leading agriculturists. Major-General the Hon. A. N. Hood presided.

After ample justice had been done to a dinner which reflected great credit on the establishment and its manager,

The CHAIRMAN proposed "The Queen." After remarking that that toast was sure to be always acceptable in such an assembly, the gallant General observed that every member of that Club in town must have been gratified at seeing stock from the royal farm at Windsor exhibited this year in her Majesty's own name, the Queen having thus closely identified herself with agriculture, and more particularly with that club (cheers). It was not perhaps generally known that her Majesty was one of the largest farmers in the kingdom. She now exhibited Shorthorns, Herefords, and Devons, all of her own breeding; she took great personal interest in everything connected with agriculture; and she was highly pleased at being a successful competitor on that occasion (cheers). The farmers of England were proverbially attached to the throne and institutions of the country, and he was sure they would always regard the Queen with the greatest loyalty and affection (great cheering).

The CHAIRMAN next proposed "The Prince and Princess of Wales, and the rest of the Royal Family." In doing so, he alluded to the fact that the Prince of Wales was a member of the club, and that he was also an exhibitor that year for the first time. He was sorry that his Royal Highness was not a successful exhibitor on that occasion, but they would wish him "better luck next time" (cheers). With regard to the Princess of Wales, he was happy to say that she was now recovering from her long and painful indisposition (cheers). Her Royal Highness's popularity was equal to that of the Prince, and he was sure every one would rejoice to hear of her restoration to health. Their Royal Highnesses Prince Christian and Prince Leopold had paid a visit to the show and expressed themselves highly gratified at the magnificent collection which they witnessed.

The CHAIRMAN then gave "The Army, Navy, and Volunteers."

The Hon. VICTOR YORKE, in responding for the army, observed that during the past year he had been appointed member of a commission to visit France and Germany, and inspect the arms and fortifications of the two countries. At the Paris Exhibition he was gratified at finding that our exhibition of munitions of war was in every respect superior to that of any other nation. This the Emperor of the French himself acknowledged, and he knew for a fact that the Emperor had been in the habit of visiting this portion of the Exhibition every morning before the building was thrown open, and having every gun and all the munitions of war fully explained to him. From Paris he (Mr. Yorke) proceeded to Chalons, where he saw the French army in the field, and had an opportunity of witnessing the performance of the Chassepot rifle, of practising with it himself, and of seeing it used by the French troops. It was no doubt a wonderful weapon; but at the same time it was a weapon that could not be used by the French nation in actual warfare, for the simple reason that it was too expensive. Every single cartridge made for the Chassepot cost 3d.; and he had not only seen the weapon itself constructed, but the cartridges. At Metz he found 400 women employed in the manufacture of the cartridges. The work was so difficult that men could not do it; women's fingers were therefore required; and by this means they managed, with 400 women, to produce from 15,000 to 20,000 cartridges daily. Comparing this with what we did ourselves at Woolwich, it would be seen that at the Royal Arsenal one man with one machine managed to turn out 550,000 Snider cartridges per day (cheers). He thought, therefore, we might consider that our army, though small in numbers, was not inferior to any in the world so far as the materials and munitions of war were concerned (cheers).

The Earl of HARDWICKE briefly acknowledged the compliment on behalf of the navy, and

Captain GARRETT, of the 9th Suffolk Rifle Volunteer Corps, did the same for the volunteers.

The CHAIRMAN again rose, and said: Gentlemen, in inviting you to drink "Success and Prosperity to the Smithfield Club," I must congratulate the members of the club upon its having retained its high position amongst the agricultural societies of the kingdom, and on this year's show being in no way inferior to those which have preceded it. On the contrary, it has been admitted to be generally superior. There are some excellent beasts shown of the established breeds, Shorthorns, Herefords, and Devons. These are all well represented, and I must also say that the Welsh make an excellent class, as do the Sussex. The sheep, too, are exceedingly good, as represented by my noble friends Lord Walsingham, Lord

Berners, the Duke of Richmond, and some others (Hear, hear). But the object of the Smithfield Club Shows is not only to have more fattened level animals: another of its aims is to have animals developing early maturity. And this result I venture to say has been obtained by the prizes which have been given by the club for young animals. If you look at the young Shorthorns and Herefords under two-years-and-a-half-old, and the wether sheep under twenty months old, I think you will agree with me, that by paying close attention to the breeding and rearing of stock the farmers have secured that object (cheers). At the present moment there is one matter in reference to which the agricultural community ought to be especially grateful—I allude to the disappearance of the cattle-plague from amongst us (Hear, hear); and to the fact that cattle are now allowed to pass from one end of the kingdom to the other without restriction, the only exception being the metropolitan district, itself a very wise and prudent exception until a measure has been passed through Parliament directing that all foreign stock shall be slaughtered at the ports of debarkation (loud and continuous cheering). I had the honour of presenting a resolution of the council of this club to the Lord President of the Council, and his grace then informed me that it was the intention of Government to propose a Bill in Parliament, and this promise has since been redeemed (Hear, hear). The measure, therefore, is before Parliament, though we have not had an opportunity of knowing what it is, owing to the Bill not yet having been printed. I hope, however, before Parliament meets, the three great national societies, the Royal Agricultural Society, the Smithfield Club, and the Central Chamber of Agriculture, will have had an opportunity of knowing exactly what is the nature of that Bill, and of expressing their opinion upon its provisions (cheers). For I do not hesitate to say that it is a matter of vital importance to the future safety of our herds and flocks (loud cheers). And I believe that by the establishment of markets for foreign stock, we should not only be free from the cattle-plague, but also be free from pleuro-pneumonia and the foot-and-mouth disease (Hear, hear). Experience of the past ought to make us careful as to the future; for I am quite certain that I speak within the mark when I say that the cattle-plague has cost the agriculturists of this country five millions of money, and the consumers quite as much more (Hear, hear). Surely a fact such as this is sufficient to arouse the energies of our rulers, with a view to prevent by legislation the recurrence of such a calamity (cheers). To return to the subject of the toast more particularly: I find that the Club in its early days passed through much vicissitude. It was established in the year 1798, and in 1799 held its first show. In 1817 its financial condition was so bad that the Bedford medals only were given. In 1821 it was proposed by a member that the Club should be dissolved. In 1822 it was left without a president. But soon after that a few patriotic men came to the rescue, and since 1825, when Lord Althorp, subsequently Lord Spencer, became president, followed as he was by the late Duke of Richmond, both of whose services to this Club and to the cause of agriculture can never be forgotten, the association has continued to prosper (cheers). Year by year it has increased in importance, and, judging by the practical and able manner in which it is managed by the council, it gives promise of a long and beneficial career (cheers). With regard to the state of its finances, I may mention that it is satisfactory, although £1,000 has been taken out of its funds for the enlargement of the galleries of the Agricultural Hall, a measure which is regarded with approval not only by the implement makers, but by the numerous visitors to the show. As a proof that this investment has been of a profitable character, I need only inform you that this year alone the additional space has given £246 to the coffers of the Club (cheers). At my suggestion the council have come to a resolution for having a written annual report of the show (Hear, hear). This is a measure which I think will be of great utility, and I am sure that every assistance will be given by the stewards, and the officers, and members of the Club, to the writer of that report; and if, in addition to this, the butchers who purchase any of the most extraordinary prize animals will furnish the dead weight of the carcasses, we shall be most grateful to them (Hear, hear). Our Hon. Secretary tells me that he will be happy to continue the history of the Club from 1857 to the present time (Hear, hear). We all know how well he executed that labour up to the date I have

named, and we shall be extremely indebted to him if he will carry down the narrative to the present year. From that time we shall have an annual report of our proceedings, and I have no doubt that it will be the means of maintaining the popular interest in the Club, whose future welfare and prosperity we have all at heart (loud and prolonged cheers).

The CHAIRMAN next proposed "The Health of the Winners of Silver Cups, Mr. M'Combie and Mr. Betteridge for cattle, Lord Berners for long-woolled sheep, Lord Walsingham for South Downs, Mr. Samuel Druce for hill-country sheep, and the Earl of Radnor for pigs." He said he was sure every one must have admired Mr. M'Combie's prize animal. Her Majesty having learnt what great prizes it had won, expressed a wish to see it at Windsor, and accordingly she had an opportunity of doing so. She greatly admired it. Mr. M'Combie telegraphed up to Mr. Giblett that if Her Majesty would accept the ox he should feel great pleasure in presenting it to her. Mr. M'Combie's wish having been communicated to the Queen, Her Majesty graciously intimated that she would be happy to accept the baron, and the result was that her table would be adorned with it at Christmas.

Lord WALSHINGHAM, in returning thanks, referred in a jocular vein to a kind of challenge which he had interchanged some time ago with the Duke of Richmond, whom he had done his best, happily not in vain, to beat at the present show. Adverting to the circumstance of the Prince of Wales exhibiting for the first time this year, he said that on the previous day he had met his Royal Highness, who particularly wished it to be known that he had not sent his animals in the expectation of obtaining one of their prizes, which he was aware it was difficult to win, but to show the interest he felt in their exhibition, and the value he attached to his connexion with that Club (Hear, hear). The Prince was a young farmer, and no doubt he would have to take a great deal of pains before he could carry off their best cups; but, at the same time, they must all rejoice to see his Royal Highness enrolled among them as both a member and an exhibitor (cheers).

Mr. S. B. L. DRUCE briefly returned thanks for his uncle, Mr. Samuel Druce, who had, he remarked, requested him to express his regret that he was unable to attend the annual dinner.

The Duke of RICHMOND gave "The health of the Chairman," to whose services in the cause of practical agriculture he alluded in eulogistic terms. His hon. and gallant friend, he observed, had referred to the gratifying circumstance that our most gracious Sovereign had, for the first time, this year

exhibited stock in her own name. He hoped, therefore, he might be allowed to say, without betraying any want of good taste, that he had had the honour of conversing with the Queen upon this subject during the past summer, when her Majesty was pleased to ask him whether there was any reason why she should not show her stock in her own name. His reply was that he thought there could be no objection to her doing so, when her Majesty remarked that she was most anxious to do it, because the exhibition of the stock in her own name would evince to the agriculturists and the public at large the great interest which she felt in agriculture (loud cheers). The result, as they all knew, was that her Majesty was now one of the largest exhibitors of stock at the Smithfield Club Show (renewed cheers). The noble Duke then alluded to the playful spirit in which Lord Walsingham had rallied him about the competition which had taken place between them, and retorted that he meant to imitate the pluck of the British soldier, who never knew when he was beaten, and therefore always persevered until complete victory crowned his efforts ("Hear, hear," and a laugh). Official duties had prevented him hitherto from visiting the yard; but he was glad to hear from those who had been there, and were competent to give an opinion on the matter, that the established breeds were of unusual excellence (cheers). This was a point which he had always regarded as one of the highest importance, because, as had been said at previous meetings of the Club, however right and proper it was to encourage cross-breeding in this country, unless they kept the established or mother-breeds in a state of purity, they would soon get into difficulties (cheers).

The CHAIRMAN briefly returned thanks.

Sir WALTER STIRLING proposed "The President Elect."

The Earl of HARDWICKE acknowledged the compliment.

Other toasts followed, including "The Stewards and the Honorary Secretary," "The Royal Agricultural Societies," "The Judges," proposed by Mr. C. Howard, and acknowledged by Mr. Painter, and "The Butchers."

It should be mentioned, as a new feature of the anniversary festival, and one which was evidently appreciated by the company, that the speeches were interspersed with some excellent songs. The musical arrangements for the occasion were under the direction of Mr. George Ferren, who was ably assisted by Mr. T. Young, Mr. F. Elmore, Mr. Michael Wilson, and Mr. Theodore Distin. Mr. Young's song, "And doth not a meeting like this make amends?" which immediately followed the toast of the evening, was loudly and deservedly encored.

THE SMITHFIELD CLUB SHOW WEEK.

A more thorough examination of the Smithfield Club Show rather tends to qualify our first impression as to the actual merits of the meeting. In few of the classes, saving the Southdown and Oxfordshire sheep, does the excellence of the entries exceed that of any previous occasion, while in many sections there is a manifest falling-off. Scarcely any of the breeds of cattle are generally so well represented as they have been, either for symmetry or quality; and of course the nice art of feeding a beast has not of late been attended to with all that care, or gradually culminated to perfection, as would have been the case but for the interference of the cattle-plague. Lord Hardwicke, it appears, will signalize his year of office as President of the Club by asking for information as to how long an animal has been put up to feed? although surely such a point might be answered off-hand, "From his youth upwards." In some proof of the character of the exhibition, we may turn to what may commonly be considered the most aristocratic assembly in the Hall—the class of Shorthorn Cows, where it is doubtful whether the pedigree of the second prize could be traced through *the Herd-Book*, and the third prize was purchased as a two-year-old in Aylesbury market for fourteen pounds. "What is she by?" repeated her de-

lighted owner in reply to a visitor—"I know nothing about such nonsense as that!" Some of the sheep, again, such as the Cotswolds, were woefully below the average; as the pigs were short of numbers, and beyond two or three prize-pens, such as Lord Radnor's and Mr. Melville Cartwright's lots, by no means remarkable for any improvement in breeding or feeding. We are the more induced to speak out, from the absurd way in which the Show is extolled, both by anticipation and during the week of its celebration; more indeed, after the manner of a poster to a pantomime than with any reliable authority for such continual trumpeting. Further, we see no cause to amend, in any material degree, the report which we were enabled to give from the galleries on Monday morning last; much of the force of this naturally depending upon the knowledge we had already gained of many of the animals at Birmingham in the previous week. However, there can be little doubt but that by another year the members of the Club and the Press will be admitted to the body of the Hall during the time the judges are making their awards, and we shall there and then be enabled to speak more satisfactorily to the strength of the occasion. It is, in fact, almost the only opportunity that a connoisseur or critic has of going fairly through

the classes; for what chance can he have of anything like a fair view of a prize-beast on a shilling day?

This making of the awards was about the only sensational feature of an otherwise very "level" week's work. Never was collateral proof, or anything like a system to go on, so thoroughly upset; and never were certain of the awards so continually protested against. This was more particularly the case in the old classes of Herefords and Shorthorn steers. Standing side-by-side, it was next to impossible to understand how Mr. Pitt's second prize could have been preferred for any point to Mr. Lewis Loyd's merely commended steer? Mr. Duckham, on being appealed to, only shook his head, and "could not account for it." With the Shorthorn oxen the judges were said not to be unanimous, although all the rest of the world was quite agreed that, if Lord Penryn had been put first, Mr. Rowland Wood second, and the Duke of Beaufort anywhere, the decision would have been right enough. The throwing out of the Duke of Sutherland's handsome cow was also strongly commented on, and some other of the Hereford returns as emphatically denounced. Curiously enough, a breeder of Shorthorns was selected as one of the trio to act over Herefords and Devons, and the white-face men declare that next year they will have a Hereford breeder on the Shorthorn bench. But the plan of appointing the Smithfield Club Judges clearly requires looking into. Exhibitors can, as it is, nominate their own men, and one of the most successful competitors in the sheep-classes had proposed one of his own judges. Surely the selection should be left to a committee of the stewards and other non-exhibitors! The Club is about to issue its own special report of the Show, a record which, if boldly put, cannot but command attention; as it may afford the Judges an official opportunity of explaining some of their so far inapplicable decrees. Then Mr. Brandreth Gibbs, as General Hood announced at the dinner, has promised to continue his own history of the proceedings; and this same dinner went far better than usual, although but few of the successful exhibitors and only one of the judges could be induced to attend.

The practical men, in truth, are again getting shy of public occasions, as was evinced at the half-yearly Meeting of the Royal Agricultural Society, where but few farmers were present, and the attendance altogether was very scanty. There was nothing in the Report from the Council but had been previously published, opening as this did with the depressing facts that the success of the Bury Meeting had necessitated the sale of £2,000 more of the funded money, and that "a considerable sum is still due to the Society in arrears of subscriptions." The subsequent discussion was chiefly maintained by Mr. Arkell, formerly, we believe, manager of the college farm at Cirencester, and by the secretary of the Agricultural Hall Company, who spoke over again and again. Our own report will supply any further particulars; but it was curious, at any rate, to hear the contemptuous tone in which the prize reports on the agriculture of different counties, as published in the *Journal* were derided as "rubbish," the more particularly when we come to remember that some of these reports were written by such men as Mr. Jonas, of Ickleton, Mr. Grey of Dilton, Mr. Edward Little, Mr. Bravender, Mr. J. B. Sparling, Mr. Sewell Read, and others—gentlemen who have gained some credit for practical ability. For our own part, although they are not of course all of equal merit, we have always considered that many of these reports included some of the most valuable agricultural matter ever got together. It was the late Mr. Pusey's especial delight to *soak* a hare in one of these prize essays, and to steadily follow her through all her doubles and windings; and it would be really interesting to have a list drawn out

of those who in the way of Prize Reports of Counties have supplied such "rubbish."

The Central Chamber of Agriculture was mainly engaged in adjusting its rules and regulations—a matter, as it would seem, of some difficulty; so that the programme for the ensuing season has yet to be determined upon. The monthly discussion meeting of the companion society, as it is now called, that is of the Farmers' Club, was, according to a contemporary, "of much less value than had been expected;" in fact, after the advantages he had enjoyed, it would be worse than idle to attempt to disguise the feeling of disappointment expressed on the reading of Mr. Algernon Clarke's paper. At first we began to think that he also had come to the very general opinion that nobody reads the Royal Society's *Journal* and that consequently he was about to read one of the steam-cultivation reports to the meeting. However, as Mr. Clarke modestly put it, he "only held the door open," and the debate which ensued was conducted with scarcely any reference whatever to the introductory address. The speeches, moreover, turned quite as much, or more, on the past than on the present of steam-cultivation; and with little or no comprehensive deduction, with no attempt even to bring the several points to a focus, the business of the evening can honestly be recorded as little better than a failure. Fortunately the Farmers' Club recovered itself at the dinner of the following day—certainly one of the most spirited and successful gatherings of the week. Everything went well under a business-like Chairman, and some of the speeches, such as those of Mr. Sewell Read, Mr. Goldney, Mr. Pell, Mr. Owen Wallis, and the Reverend E. Smythies, were far above the run of post-prandial oratory. Nothing could have been happier than Mr. Smythies' introduction to the health of the Member for East Norfolk; while there was something statesman-like in Mr. Sewell Read's response, embracing as this did the chief agricultural topics of the time. If there is any event of the week we should return to more than another it would be to this speech; and the Smithfield Show week should be pregnant with subject for some further reflection.

THE PRIVILEGES OF THE MEMBERS OF THE SMITHFIELD CLUB.

"The few visitors who come in on the Monday morning might be passed down-stairs with far less practical inconvenience than attends the system of public judging at other shows. People might be kept quite as clear of the authorities in the now empty avenues; and when it is remembered how little the members of the Smithfield Club get in return for their subscriptions, we do trust that this boon will be conceded."—*Mark-Lane Express*, Dec. 9th.

"Whilst acknowledging the facilities afforded to the press as regards the prize-list, the awards being posted in the gallery as soon as they are made, we must remonstrate most respectfully against the regulations which restrict reporters to the galleries until two o'clock on the Monday, when the doors are thrown open to the public on payment of five shillings. Four or five hours, during which the reporters of our agricultural papers might get all they want in the way of a critical view, are thus wasted. We trust that this may be altered another year."—*The Field*, Dec. 14th.

"A few of the club men were in the galleries, which were so full of machinery that it was a matter of difficulty to get near the rails for a look at the judging. They say, most justly, that their privileges as members are not very extensive, and that not nothing would be easier than to admit them down stairs, where they could be roped off from the judges."—*Illustrated News*, Dec. 14.

[The reporter for the Club, whose account may not be out for a month or two was passed down on the Monday; whereas the representatives of the daily press and others, whose histories would have to be written in the course of a few hours, only went below with the public during the afternoon!]

THE METROPOLITAN GREAT CHRISTMAS MARKET.

MONDAY, DEC. 16.—The past season having been very favourable for the production of live stock in all parts of the United Kingdom, and the cattle-disease having ceased to commit its ravages, there was a wonderfully fine and even collection of Beasts for Christmas consumption here to-day. A breeds were fully represented; but it is somewhat curious to note the changes in this market during the last few years. Formerly, Smithfield was almost wholly supplied with pure breeds, whether produced in England or Scotland. Now, however, those breeds have given way to crosses, many exceedingly good, but some of a doubtful character as regards real stamina. The rapidity with which crosses almost generally are brought to heavy weights, and the strong prices frequently realized for them, have, in a measure, completely changed the character of this market. The Shorthorns have now spread themselves over nearly the whole of England for crossing purposes, and throughout Scotland there are very few pure breeds left. The extent of future crossings will depend upon price. At present the breeders and feeders are unanimous upon one point—viz., that cross-breeds pay more than pure-breeds. The number of Shorthorns and crosses here this morning represented more than a moiety of the total supply. As regards numerical strength and prime quality the Herefords came next, and not a few of them were of great weight. The number of Devons shown was equal to last year, and a finer lot of animals from the West of England has been seldom witnessed in this market. Of Welsh breeds the show was small. They appear, we regret to say, to have become quite out of fashion in the metropolis. Some thirty years since, they produced quite as much money as Scots, although the supplies were large. The Sussex breed was well represented; but the number brought forward was only moderate. The great success of this breed in the show-yard led some persons to anticipate a considerable increase in the number brought forward to-day.

Quite an average supply of Beasts came to hand from Scotland for the time of year. Without exception, both the pure and cross-bred animals were in splendid condition. As such, they were taken off somewhat freely, but at prices which did not appear to satisfy the graziers.

There were a few good Beasts from Ireland; but the aggregate supply in this respect was inferior.

It is satisfactory to state that the mongrel breeds were less numerous than usual on the Great Day.

We now proceed to particularise the best portions of this great market.

At Mr. George Dickson's stand there was a large collection of very prime Scots and crosses, forwarded direct from Scotland. The best lots were the property of Messrs. Martin, Knowles, Wishart, Skinner, Reid, Mitchell, Frost, Biddie, Bruce, and other graziers of Aberdeenshire. Also, some very fine lots from Messrs Longmore and Mr. Stodart of Banffshire.

Messrs. Maidwell and Hoyland had an excellent show of beasts, chiefly belonging to Mr. J. Reid, of The Vale of Alford, and Messrs. Morrison, Wallace, and Strachan of Tarriff. There were also some prime stock bred by R. Bond, Esq., and other graziers.

At Mr. Vorley's stand we noticed a fine collection of Beasts from various parts of the country. Mr. Hicks had likewise a fine show.

Mr. Thomas Dixon had some very fine Norfolk and Lincolnshire Beasts, belonging to Messrs. Fletcher, Capon, Miller, &c.

Other salesmen had some very prime lots, amongst which were some wonderful animals, the property of Mr. M'Combie, of Tillyfour, Aberdeen.

One of the Cows exhibited in the showyard was brought forward.

Taken as a whole the supply of Beasts was remarkably fine, and certainly in excess of last year as to number.

With Sheep the market was but moderately supplied; whilst the general quality of the long-wools was not equal to last year.

Mr. Eland had a good show of Lincolns, belonging to Mr. Healey of Croft, and Mr. Caswell of Rowton.

Mr. Wallby exhibited some very good Downs and half-breeds, chiefly belonging to the Earl of Salisbury. There were also some very fine Down Lambs, the property of that nobleman.

Mr. Dodd exhibited some fine Sheep, belonging to various graziers.

Mr. Lintott, Mr. Weall, Mr. Gurrier, Mr. Corfe, Mr. Stortley, and Mr. C. Burrell had some very fine Sheep on offer.

The following return shows the number of beasts exhibited and the prices realized for them on the Great Day during the last twenty-six years:

Year.	Beasts shown.	s.	d.	s.	d.
1841	..... 4,500	.....	3	8	5 0
1842	..... 4,541	.....	3	4	to 4 8
1843	..... 4,510	.....	3	8	to 4 4
1844	..... 5,718	.....	4	0	to 4 6
1845	..... 5,326	.....	3	6	to 4 8
1846	..... 4,570	.....	4	0	to 5 8
1847	..... 4,263	.....	3	4	to 4 8
1848	..... 5,942	.....	3	4	to 4 8
1849	..... 5,765	.....	3	4	to 4 6
1850	..... 6,341	.....	3	0	to 3 10
1851	..... 6,103	.....	2	8	to 4 2
1852	..... 6,271	.....	2	8	to 4 0
1853	..... 7,037	.....	3	2	to 4 10
1854	..... 6,181	.....	3	6	to 5 4
1855	..... 7,000	.....	3	8	to 4 2
1856	..... 6,748	.....	3	4	to 5 0
1857	..... 6,856	.....	3	4	to 4 8
1858	..... 6,424	.....	3	4	to 5 0
1859	..... 7,560	.....	3	6	to 5 4
1860	..... 7,860	.....	3	4	to 5 4
1861	..... 8,840	.....	3	4	to 5 0
1862	..... 8,480	.....	3	4	to 5 0
1863	..... 10,370	.....	3	6	to 5 2
1864	..... 7,180	.....	3	8	to 5 8
1865	..... 7,580	.....	3	4	to 5 4
1866	..... 7,340	.....	3	8	to 5 6

STATE OF THE TRADE.

The arrivals of English Beasts being large, and the weather unfavourable for slaughtering, the demand for all breeds ruled heavy. Nevertheless, compared with Monday last, no quotable change took place in prices. The best Scots and crosses sold at 5s. per 8lbs.

The arrivals of Beasts from Lincolnshire, Leicestershire, and Northamptonshire were about 2,800 Shorthorns, &c.; from Norfolk, Suffolk, Essex, and Cambridgeshire 2,000 Scots and crosses; from other parts of England 700 various breeds; from Scotland 1,820 Scots and crosses; and from Ireland 650 Oxen, Cows, &c.

Really prime Down and half-bred Sheep were in fair request at full prices; but all other breeds were very dull at slightly depressed currencies. The top figure was 5s. per 8lbs.

Calves—the show of which was limited—moved off slowly at late rates—viz., 4s. 4d. to 5s. 4d. per 8lbs.

There was a moderate sale for prime small Pigs at last week's prices; large Hogs, however, were very dull. The highest figure was 4s. 2d. per 8lbs.

HEAD OF CATTLE ON SALE TO-DAY.

[FROM THE BOOKS OF THE CLERK OF THE MARKET.]

TOTAL SUPPLIES.		FOREIGN SUPPLIES.	
Beasts	8,110	Beasts	1,350
Sheep	20,840	Sheep	7,320
Calves	218	Calves	207
Pigs	420	Pigs	70

COMPARISON OF THE "GREAT DAYS."

STATEMENT SHOWING THE SUPPLIES AND PRICES OF FAT STOCK EXHIBITED AND DISPOSED OF ON THE "GREAT DAYS" IN 1866 AND 1867.

	s.	d.	s.	d.	s.	d.	s.	d.	
Coarse and inferior Beasts	3	8	to 3	10	.....	3	4	to 3	6
Second quality ditto	4	0	4	8	.....	3	8	4	0
Prime large Oxen	4	10	5	2	.....	4	2	4	6
Prime Scots, &c.	5	4	5	6	.....	4	8	5	0
Coarse and inferior Sheep	3	10	4	2	.....	3	4	3	8
Second quality ditto	4	4	5	0	.....	3	10	4	2
Prime coarse-woolled ditto	5	2	5	10	.....	4	4	4	8
Prime Southdown ditto	6	0	6	4	.....	4	10	5	0
Large coarse Calves	4	8	5	4	.....	4	4	4	8
Prime small ditto	5	6	5	10	.....	4	10	5	4
Suckling Calves (each)	20	0	23	0	.....	23	0	26	0
Large Hogs	3	6	4	0	.....	3	4	3	8
Neat small Porks	4	2	4	6	.....	3	10	4	2
Quarter-olds (each)	27	0	30	0	.....	23	0	26	0

SUPPLIES ON SALE Dec. 17, 1866.

Dec. 16, 1867.

Beasts	7,340	.....	8,110
Sheep	19,120	.....	20,840
Calves	200	.....	218
Pigs	310	.....	420

CENTRAL FARMERS' CLUB.

THE PRESENT ASPECT OF STEAM-CULTIVATION.

The concluding discussion meeting of the Farmers' Club for the year, took place on Monday evening, Dec. 9, at the club-house, Salisbury Square, the chairman of the year, Mr. E. LITTLE, of Lanhill, Chippenham, presiding. The subject appointed for discussion was "The Present Aspect of Steam-Cultivation," being introduced by Mr. J. A. Clarke, of Long Sutton, Lincolnshire. The attendance was very large.

The CHAIRMAN in opening the proceedings observed that steam-cultivation was one of the most important subjects that engaged the attention of the agriculturists of England in the present day; and notwithstanding its having been discussed in that Club three or four times, and regarded from different points of view, and notwithstanding that three distinct reports upon it had been issued by the Royal Agricultural Society, he had no doubt that the gentleman who had undertaken to introduce it that evening would throw new light upon it. That gentleman was perhaps better acquainted with the subject than almost any other man in Her Majesty's dominions. Although he might not perhaps be practically acquainted with agriculture, there was no man who had taken a deeper interest in, or who took broader views of this question than Mr. Algernon Clarke (Hear, hear). He (the Chairman) had not had much experience of steam-cultivation beyond what witnessing what others had done. There was one question on which he hoped Mr. Clarke or some gentleman who followed him would give some information, namely, whether crops grown after steam-cultivation in the last season had been as deceptive in the field as crops grown by ordinary cultivation? Not wishing to offer any opinions of his own on steam-cultivation, he would now call upon Mr. Clarke to introduce the subject (cheers).

Mr. J. A. CLARKE said: Mr. Chairman and gentlemen, I propose to-night to submit a very short, and I am afraid a rather rough, paper on steam-cultivation. In preparing it I did not suppose that I was invited to come here to give a lecture on the subject, but rather that I should take the place of a servant who stands at the door to announce the visitors. I shall

merely introduce the topic, and then I have no doubt it will prove perfectly capable of taking care of itself. I shall, in fact, make a few short remarks, and then listen to persons who have had practical experience in steam-cultivation, more particularly in the year 1867 (Hear, hear). About a year ago, Mr. Chairman and gentlemen, if you had been in the right place at the right time, you would have observed four gentlemen making their way on foot, and with some difficulty, through a field of high-topped turnips; you would have noticed that the "understandings" of those individuals were high-topped too; that one wore leather-leggings, another gleamed in shiny gaiters, another braved the wet crops without any covering to his cloth, and the fourth figured in a nether garment curiously constructed to be breeches and waterproof gaiters in one. Two of the party you would have sworn to, as looking every inch of them country gentlemen and good sportsmen; but though the talk of all four did run a little gamey, especially when a covey rose from the greens, yet they did not carry breech-loaders, and not a dog or a beater was in sight. You would have soon found that the topic of a rapid cross-firing of question and answer was strictly agricultural—about tillage operations, yields per acre, expenses, and returns; you would have at once concluded, from the queries put and observations made, that these were practical men of business, thoroughly familiar with details of farming on heavy or light land; and that they meant treasuring up the information they were gleaning in fields far from home, you would be aware from the circumstance of the slenderest man of the four standing still every now and then, to pencil his note-book (in spite of a dripping rain), and then running forward to catch up the others. Gentlemen, that was one of the Inspection Committees of the Royal Agricultural Society, engaged in collecting evidence on steam-cultivation. Speaking for that committee, I may say that in the course of several long rounds, extending from the Fens below Peterborough to the apple-country near Worcester, and from the chalk downs of the Wiltshire White Horse up to the potato-country by the Firth of Forth, we met with plenty of hard-work and, at the

same time, with amusing incidents enough to keep us in good spirits. Indeed, one of our number, to whose perseverance and continual flow of good humour the success of our enterprise was mainly due, suggested that, "What we saw and what we didn't see, put together would make a very tidy novel." "Breaking the ice" at a "very swell place;" laughing over a homely snack with a little farmer just afterwards; getting over the awkwardness of remembering our long string of "instructions;" being sometimes entertained in wonderfully pleasant quarters, at other times glad of a thrifty cottage luncheon; meeting with a downright though good-natured refusal at one farm, after forty miles by rail and road—"Have some luncheon?" ask what you want to know; "but I'm not going to be reported on: you shall not see my farm;" arriving, after a nine-mile drive in a cold drizzle, at a homestead where nobody was at home, and the poor steam-tackle lay in a back-yard, rusted and half-hidden in a two-years' jungle of grass; comparing notes on the ropes of couch that might be twisted upon farms of "eminent agriculturists," exhibitors of "prize animals," and so on: all these and many more circumstances helped to keep us in heart through a most wet and unfavourable season. But a few bits of merriment we shall never forget, such as the straw-stacking at one place, by a series of men seated on a tall ladder, and handing-up a fork of straw over-head from one to another; the inquiry, "Was Mr. C. so satisfied with the steam-plough that, in the absence of that, he would buy another?" answered by "the misaisa," "I wouldn't let him;" the quaint old bailiff with the nobby gloves; the antique driver of a hired trap, who lectured a couple of us upon "the ridiculous beard movement;" the extensive agriculturist with the rough cob, the ash-plant, and the big trouser-patch; the reception (at an hotel in a manufacturing city) with courtly formalities, as "the royal commissioners;" the favour of a certain bottle of grand old port, somewhere in the West of England; and of the tea and cutlets which wound-up a good many days without dinners. And in general, I may say that, what with the hospitalities of many morning-calls per day, and the sloppy state of the atmosphere, we found steam-cultivation to be anything but dry. Very dry, however, I am afraid, you will find the subject to-night; there is little new that could be said, and I can only cite some of the principal facts contained in the 330 pages of "Reports of the Inspection Committee." A gentleman, non-agricultural, said to me, "I have read most of your steam reports, and see that steam-tillage is very successful in many places; but it appears hardly so well established that one may say to a farmer, 'You have got so many acres of such a kind of land; then, of course, you should have a steam-plough.'" Now, I think, that such a conclusion from our reports is erroneous. If we had felt justified in publishing that on such and such a farm you should work a roundabout tackle, on such and such a farm a direct-action tackle, on such and such a farm a double-engine tackle, and so on, and nothing else will do so well, why we should have been bold men, but not very prudent. Opinions have been given upon the various points involved in the adoption of steam-culture; but the main value of the reports consists in their multiplicity of examples, by means of which any person may see for himself what are the advantages or disadvantages pertaining to each system upon a farm like his own. The question is far too big and too complicated to be settled off-hand in a few hard-and-fast deductions. But I maintain that, taking the cases *seriatim* throughout the reports, you cannot draw any other conclusion than that the steam-plough and steam-cultivator are quite successful enough to warrant any man in imitating for himself what he reads is being done by other people.

How many of the 135 cases described in the reports are evident failures? How many of such failures are incapable of easy explanation, in no way to the discredit of the machinery employed, or, if so, not to the discredit of the system or principle adopted? Are not nearly all the cases more or less successful. Let us look at some of the reports, say on the heavy lands. Go to farm No. 1, of 2,500 acres arable, of stiff blue clay and warp, in large fields, flat, but undrained. The repairs, renewal, and wear-and-tear of a Fowler 14-horse power since 1862, average £100 a-year; this engine ploughs or digs 8 to 12 inches deep, 8 acres per day (including removal), at a cost of 4s. 2d. per acre for working expenses, to which may be added nearly 4s. per acre more for the machinery. That must be an economical success; and though there has been no reduction of horse-flesh, more work is done, and more crops are grown, which is the main point. No. 2: Heavy soil drained in large fields; a Fowler 14-horse power costs about £50 a-year in repairs; it does 4 to 7 acres per day, some of the work 15 inches deep, and the farmer only regrets that he has not two engines in the "set" instead of one. No. 3: 500 acres arable, of alluvial and heavy clay, where two horses plough 3 roads per day, 6 or 7 inches deep; a Fowler 12-horse power costs about £25 a-year in repairs, besides rope; ploughs 5 or cultivates 10 acres per day, with working expenses 2s. 6d. to 5s. per acre; by very digging, the fertility of the fields has been amazingly augmented. No. 4: 400 acres arable, of heavy and loam soil, in large fields, and drained; a Fowler 14-horse power cultivates 8 and 9 acres per day for 8s. to 3s. 6d. per acre, besides repairs, and 15 horses have been reduced to 12. No. 5: 500 acres, so stiff that sometimes it takes 6 horses to plough 6 inches deep; half-drained, large fields; a Howard 10-horse power costs £20 a-year in repairs, besides rope; cultivates 7 to 10 acres per day (including removals); does about 400 acres in a year, at 6s. per acre, to which must be added 1s. per acre for rope, and 1s. for interest and depreciation; total 8s. per acre. The team force has been reduced from 27 horses to 20, the seven old ones sold off, making £100 towards the £500 purchase-money of the tackle. Now in that way one might go through the whole of this report, and I undertake to say that we should find only a very small per-centage of cases in which there was an evident failure, and the farmer would have been better without the apparatus (Hear, hear). One of the principal grounds of fear was that we should find the expense of steam-cultivators at work to be too great; but that does not appear in any of the reports. There is, in fact, nothing of that kind to cause alarm to the mind of the farmer. Here (referring to the Report of the Commission) is a farm—No. 8—a fen farm of 1,000 acres, on which there is a set of apparatus, one of the Woolston sets, with a ten-horse engine. The cost of the repairs is stated at about £10 a-year. The total wear-and-tear, exclusive of interest, upon the entire apparatus, is 4s. 6d. per acre. The work is done 8 to 9 inches at the rate of six acres per day. About 230 acres were broken up by steam every year. The occupier, Mr. Cranfield, is perfectly satisfied with his set of apparatus, and thinks that on a farm of 400 acres tackle might be used profitably. The conclusions which are given in the reports have, of course, a considerable value attaching to them; but I do not think it is fair to judge of the reports merely by the conclusions, which, being only a few supplementary remarks, do not contain anything like the full amount of lesson to be drawn from the cases themselves. I don't think I could do any good by going through the whole of the Commissioners' Report (laughter); but if you look through the document yourselves, supposing you should not have done so already, with sufficient care, you will

find it bearing out my statement that only a very small percentage indeed of the cases reported exhibit anything like failure, and that the conclusion from almost every case is that the farmer is satisfied with his apparatus, and that it is beneficial to him. There is a considerable amount of evidence as to the superior economy of steam as compared with horse-power cultivation, and there is almost universal testimony to the greater expedition of steam, and the increased power which it gives the farmer of getting on properly with his work. There is likewise a great deal of evidence as to the increase of yield. Those who read the report carefully must often come upon some very startling results of that kind. Eight bushels an acre as the increase in wheat is spoken of in several cases. In most cases, too, there is a large addition in the root crops, roots, moreover, having been grown with steam where none could be obtained before. I don't know that much need be said on that point. The principal novelty which I wished to introduce is already sufficiently old; I allude to the very large amount of work which can be done with steam in a day. I have here a letter of my own on this subject, which was published last July; but I do not think sufficient prominence has been given to the facts which it relates. At Bury St. Edmund's there was a set of Fowler's steam-apparatus at work in a field; there was a set of Howard's apparatus at work in another field; and on a certain morning certain persons went to watch a trial of the extent of land which could be cultivated with those two sets of apparatus in a day. It was not a competitive trial, but the object was simply to see what steam-power was really capable of doing. The land was not, as you will see, particularly heavy. I thus speak of the matter in my letter: "In a field of light, pebbly loam soil, on the farm of Mr. Green, about a mile west of the town, I found Messrs. Fowler's apparatus at work. They work on four different principles, to suit different requirements of different soils, localities, and customers; but I will not enter upon a description of the machinery just now. Two engines of 12 and 10 horse nominal power were hauling to and fro a new cultivator, which takes 12 feet width at once. The work was for the most part light, because the ground had been broken up the day before; but the wheels, sinking in the soft earth, let the tines down to six or eight inches depth. The last two or three bouts that I saw done were half in removed ground; and in breaking up this, the tines went in only about five inches, or barely that; the engines, however, did not slacken their speed, and hardly seemed to feel when the implement came to the hard piece. This showed that there was 'power in hand' while doing the already cultivated portion of the field. An hour's race against time began at 8.35 and finished exactly at 9.35½ by my watch; and in this interval the implement made 18 journeys, accomplishing a total breadth of 74 yards. The length of the work was 340 yards, not including the headlands (which are left of only five, or at most six yards breadth, by this new plan of working), and the area, therefore, was 25,160 square yards, or 5.2 acres tilled within the hour. In a day of 10 hours, this rate of work would amount to 52 acres; and in a long day of 13 or 14 hours, the performance would be 67 or 72 acres! The pace of the implement was not excessive; I did not ascertain what it really was, but judged it to slightly exceed four miles per hour. The time lost in turning at the ends, however, I did not observe, because I felt sure that everybody who might hear of this wonderful feat would say, 'Oh! that is all very well with trained engineering men, but farm labourers could not be so quick at the ends as these men no doubt were.' Well (to say nothing about the 'man' who drove one of the engines being a 'boy' sixteen years old), the following were the number

of seconds occupied in the eighteen turnings—20, 60, 25, 35, 20, 75, 45, 50, 25, missed, 20, 20, 25, 30, 30, 40, 65, 20—the average being over 35 seconds. If the details of the turning-chains and hooks had been perfect (as they will be made in a short time), the minimum time of 20 seconds would have been kept up through the entire experiment, and at least another (or nineteenth) journey would have been accomplished within the hour; and the area done would have been 5½ acres—that is, 55 acres per day of 10 hours, or 77 acres in 14 hours, if the work were maintained without intermission by relays of hands—"

A MEMBER: Seventy-seven acres a day!

MR. CLARKE: Seventy-seven acres in one day of 14 hours. (Laughter.) The letter continues: "I was not speaking wildly, then, when talking of 60 acres of light soil worked by the tines of a cultivator, by one set of tackle, and in a single day. But on that same Wednesday I saw something else very remarkable in expeditious steam-culture. In one of Mr. Guy's fields, a quarter-of-a-mile from the showyard, Messrs. Howard's two 14-horse engines were working two cultivators at one and the same time. Instead of the engines being made to play with one implement alternately passing from one to the other—one engine looking foolish while waiting till the other has done—both engines pull simultaneously at two implements; and the breadth of 5 or 7 feet at a time (according to the difficulty of the work) is thus accomplished for the whole length of the field in little more than half the time that would be occupied by the same two engines in doing it with a single implement. The length of the work (280 yards) was run in one minute and a half—that is, in this time a strip, 280 yards long and 5 feet wide, was finished by the two cultivators running half-way and meeting in the middle; the time in turning was a quarter up to half a minute; and I estimated the rate of working to be about 3½ acres per hour. Kept up for 10 hours, this would be about 38 acres, or for 14 hours 53 acres in a day. The soil was by no means light, and the work too hard to show what will be done with the cultivators at their full breadth of 7 feet each. They were worked with two tines removed from each implement, thus only 5 feet apiece; but, with their proper number of 7 tines each and in a light soil, the performance, of course, would be correspondingly increased." Now some persons may think it rather astounding to talk about from 50 to 70 acres a day being cultivated. I admit that it is very astounding; but I also assert that I saw the thing done—(Hear, hear)—and there are other persons who also saw it done. (Hear, hear.) I may tell you, too, that the apparatus was not in a perfect state; it was one of the earliest trials of that particular arrangement. I have not the slightest doubt that the makers of steam ploughs are prepared, though I have not their authority to say so, to do, in answer to a challenge, an extent of land in a day which would astonish every one present. I have not the slightest doubt myself that seventy acres—I should not stare particularly if the quantity were a hundred acres—could be cultivated, provided the work were tolerably light. One of the objections urged by some persons against steam cultivation is, that it is chiefly on heavy land that it succeeds; and doubts are expressed whether enough work would be done in a day to pay, upon light lands. Well, here I have shown what is the quality as well as the quantity of the work performed; and my opinion is, that the light-land farmer would benefit quite as much by steam cultivation as the heavy-land farmer. Gentlemen, I really think I should be acting improperly were I to detain you by dwelling on a number of facts which have been laid before the public. I don't think there is, in short, anything very new to be said on the subject. For my part,

I should like now to hear the experience of persons who have used the apparatus during the last season. Particularly do I wish, with our chairman, to ascertain whether the crops grown in the last season on steam-cultivated land have or have not exhibited the same deficiency in yield as crops grown on land cultivated with horse-power. In conclusion, let me say, gentlemen, that I feel exceedingly indebted to you for the patience with which you have listened to me; and I have to apologise to you for having submitted such a rough and imperfect paper.

Mr. GREENE (M.P. for Bury St. Edmunds) said he had come there that evening on the invitation of his friend Mr. Smythies as a listener, and without intending to make any remarks, although the subject of steam cultivation was one in which he took a deep interest. But the gentleman who had introduced the subject made an allusion to a matter in which he was personally concerned—namely, the experiment in steam cultivation which took place at Bury St. Edmunds under the auspices of the Royal Agricultural Society. That experiment having been tried on his own farm, he wished to say that he afterwards had a most excellent crop of turnips (Hear, hear). He believed that steam cultivation had only to be practised to be appreciated (Hear, hear). He had tried it. They had seen it exhibited at various shows under the most favourable circumstances, with the aid of men who were trained to perform the work in the shortest possible time, and to use the smallest possible amount of coal; but now he farmed about 400 acres of land, having given up one of 160, and was at home only about six months in the year, and, farming not being his ordinary business, was not able always to give it that amount of attention which was essential to ensure complete success, and when he told them that he was able to carry on steam cultivation as easily as he had employed a pair of horses, he thought that might be some encouragement to those who had not done so to try it themselves (Hear, hear). He had not on his farm a single man employed in steam cultivation who was not there when he took it. There was no skilled engineer; but he had cultivated with steam by employing the same labourers as he had before. His experience in life had taught him that if you wished your work to be done well you must give the man who did it some interest in it, and he had cultivated his farm on that principle, each man being paid by the piece, and not by the day (Hear, hear). Thinking the Club might wish to know what his steam cultivation had cost, he had provided himself with the facts. His farm was, he should state, a light-land farm. He paid the engine-driver 6d. a day per acre, the steersman 3½d., the windlass-man 3d., two anchor-men 2½d. each, making 5d., porter boys 8½d., water, &c., 1d. All had an interest in doing a fair amount of work. The water boy did not complain because he had to cart so many loads of water, being paid in proportion to what he did, nor was there any complaint on the part of the others, and generally from 10 to 16 acres a day were cultivated. He was prepared to assert that on his farm one acre per hour was the average, including the moving from field to field. The labourers received 1s. 10d. per acre, and coals cost him 1s. He had made his calculation, he might remark, if anything, rather excessive than otherwise, having no sympathy with those who gave the minimum price at which work could be performed on particular occasions, that price being one at which work could not be carried on practically or generally (Hear, hear). He had put the oil at 1½d., the carting of water at 4d., moving porters, &c., by horse 1½d., and interest 1s. 6d. As regarded this item for moving porters, he might observe that if he put out 100 acres of land to be cultivated, and there were four different fields, the men had of course to

move the porters, and for that purpose he lent them horses. The interest was the interest on machinery; and the total of the items which he had just mentioned was 4s. 11d. per acre. His calculation with reference to the machinery was that it cost him £738. As he used the engine to thrash, grind, and cut chaff, he deducted half the cost of the engine—namely, £200 from the capital, leaving £538. Let him advise them, in passing, if they adopted steam cultivation, not to have an engine of just the nominal power required. If a hunter were wanted to carry 12 stone, he should be able to carry 13; and the same principle applied to steam cultivation. He had an engine of full 12-horse power, with a double cylinder. The cost of the machinery being, after deducting £200 for the engine, £538, he put the depreciation and repairs at twenty per cent. per annum, which amounted to £108. He had overdone that, but in all these calculations he desired to be outside rather than within the mark. He saved on his farm four horses, which with keep, &c., met that amount. No gentleman present, he thought, would tell him that the keep of a horse cost less than £25.

A MEMBER: It is not under £30.

Mr. GREENE continued: He then charged himself 5 per cent. on the remaining £538 (the actual cost was less), the way in which he arrived at that being by charging as interest 1s. 6d. per acre. The figures which he had thus stated were certainly on the right side; they were figures by which he could safely abide, both as regarded cost of labour and capital. He was quite sure that when a farm was laid out in fields of sufficient size, steam-cultivation was both practicable and profitable (Hear, hear). They all knew that what they wanted was not merely to have work done, but to have it done at the period when it would be most advantageous (Hear, hear). He would ask any practical man there what was the value of the cultivation of an acre of land at the end of August or the beginning of September, when the sun's heat glared upon it, compared with the value of cultivation at a different period of the year? He believed the time would come when they would have steam apparatus moving about the country in the same way as they now had steam-threshing machines (Hear, hear). He had adopted it for all purposes on light land. He believed that at present the principle of the rope, Mr. Howard's principle, was, on the whole, the best, less capital being employed, and the work being most simple and practical; but if steam-cultivation were a truth—and if it were not a truth it would not stand, while if it were a truth it would stand—the best principle for general application and moving from farm to farm would prove to be Fowler's principle of the double engine, and for this reason: they all knew that at harvest time no one had too much labour at their command, and Mr. Fowler's principle required but two labourers to carry it into operation. So far as he was himself concerned, he had no cause to complain of recent results, having grown since his wheat crop turnips, coleseed, and other things, which could be ready for spring-feeding for his ewes. But he contended that if a man was to keep pace with the times, he must not, to use an old phrase, be obliged to look to the barn-door for his rent. Living as he did in an agricultural county, he desired to see agriculture flourish; he desired to see it take its place with manufactures (Hear, hear). He did not like the man who sought to live simply by saving expense and not by growing crops; he liked the man who sought to live by producing for the benefit of his fellow-men as well as for his own. He was convinced that, whatever competition there might be, farmers would be enabled to hold their own, but at the same time he thought more must be done with the land than had hitherto been done (Hear, hear). They would

all agree with him that it was highly important that heavy land should be deeply and well cultivated; and he believed that the same principle which made heavy land light and porous and in a better working condition, so that it would be fitted to drain itself, applied to light land in reference to drought; he believed that the deeper light land was cultivated the less would it suffer from drought. Let him again warn them against being frightened by the bugbear that in steam-cultivation it was necessary to employ skilled hands. He was a brewer, and might be asked what business a brewer had to do with farming. His business with it was, that he was very much interested in agriculture, and was very fond of farming. Five-and-twenty years ago, when he commenced applying steam to the process of brewing, he employed a skilled man—that man knowing more than he did about steam; he determined to substitute for him some one who knew nothing about it, and who would have to gain all his knowledge from himself, and since that period he had never had an accident (Hear, hear, and laughter). In the remarks which he had made he was actuated by only one desire, and that was to make them think practically, and for their own benefit. The person whom he employed to manage his steam-cultivator was just a labourer whom he found upon the farm when he first went to it, and whom some one taught to drive the engine, and with that man he got on very comfortably. If he wanted 50 acres of land cultivated when he was coming up to London, all he had to do was to give his orders, and the work was sure to be done. On a farm of four or five hundred acres, a steam-cultivator was, with proper management, sure to pay, and with the engine they would be enabled to thrash their corn without waiting for weather, and be enabled to take advantage of markets (cheers).

The Rev E. SMYTHIES (Hathern Rectory, Loughborough) wished to mention one point of great interest to himself and to thousands besides, who were in a similar position. He should be glad if there were elicited in the discussion an answer to the question how practical farmers occupying about 200 acres of land, of a strong heavy nature, were to have their land cultivated by steam (Hear, hear). It was clear that for 200 or even 250 acres it would not pay to set up steam apparatus. When an appeal was made to Mr. Howard on this subject, and he was asked why he could not send apparatus to different parts of the country, as thrashing machines were sent about, he replied that his firm found it more advantageous to confine themselves to their own branch of the business, which was to make machinery rather than to use it. He should be glad if the object could be attained by means of companies. He had done what he could to induce the proprietors of steam-thrashing apparatus in his own neighbourhood to employ steam ploughs, but without effect, persons of that kind not having sufficient capital at command. He for one was prepared to offer £1 per acre to any one who would come and cultivate his land with steam [A member: "At your own time?"] He thought the time might be easily arranged; they could not have steam-thrashing machines whenever they pleased; neither could they have steam ploughs.

Mr. J. BRADSHAW (Knole, Guildford) said no man probably had felt greater interest in steam-cultivation than himself; but he had not been a practical man with regard to it for the last two years. He had been both pleased and disappointed at what he had heard that evening. In the first place, he had thought that the days of calculation had passed away. He was the first person, perhaps, that ever gave to the country the annual cost of steam-cultivation, as compared with cultivation by horse-power; and the results were so much in favour of the former that he might have thought that, as regarded a

moderate quantity of arable land—say 400 acres,—the question was settled. He then put the cost of steam-cultivation at from 8s. 11d. to 4s. 8d. the acre. Taking horse-power at 12s. an acre, and with a cultivation 12 inches deep, the saving amounted to £138 per annum; and, therefore, at the end of three years all the wear and tear would be paid for. Another question which had been mooted that evening was raised years ago—namely, whether of steam-cultivation was as beneficial on light as it was on heavy land. He (Mr. Bradshaw) had never entertained any doubt on that point. On the lighter lands the resisting power was less than on heavy lands; and therefore, whether Fowler's machine or any other were employed, they had only to extend the power of the implement as the land became heavier. Until he employed steam-power he never had his land under his control, but from the moment he began to employ it the state of things was reversed. The chairman had asked a question as to the advantage of steam-cultivation in the last season over horse-power as regarded the yield of the crops. He (Mr. Bradshaw) would be glad to hear the opinion of some one else on that point; but, for his own part, he did not think there could be any extraordinary advantage, because what farmers suffered from in the last year was the severe frost on the 23rd and 24th of May; it was from that cause, he believed, that the wheat declined. In conclusion, he wished to bear his strong testimony in favour of steam-cultivation; and he felt certain that the more it was tested the more extensively it would be adopted. (Hear, hear.)

Mr. T. B. DRING (Claxby, Spilsby) said he felt very much pleased to find, from the discussion, that steam cultivation had always proved so successful, no one having spoken that evening about having made a bad choice of apparatus, and nothing having been said about rusty tackle lying on one side unused, and practically found useless. He had certainly expected to hear some complaints of this kind; but every gentleman who had spoken of his own experience in the matter seemed perfectly satisfied. Mr. Greene told them that he had got rid of four horses.

Mr. GREENE, M.P., observed that what he maintained was that on four hundred acres you might save four horses by using steam.

Mr. DRING continued: He rather dissented from what had been said about the saving of horses. After using steam for a great number of years—and he believed that he obtained about the first or second set of tackle that was made—his conclusion was, that there was great danger attending the reduction of the horses, the weather not being always alike. If you could depend upon the seasons being all dry, the number of horses might be greatly diminished; but in such a wet season as the last but one, the steam-cultivator would not be so valuable as the ordinary horse-power to turn over the land for the next crop; and if the number of horses had been much reduced, they might find themselves in an awkward position (Hear, hear). The man who had both steam and horses was in a much better position than the man who depended entirely upon steam. He (Mr. Dring) had worked his tackle this year with greater success than he had ever done before. His turnip-crops had never before been so good. He knew that it was a favourable turnip season; but his turnips did well from the first; and he looked upon the possession of a steam-cultivator as a great advantage in obtaining turnip-crops. He had arrived at the conclusion that it could not be profitable for any private person or company to buy steam-tackle, to let out on hire (Hear, hear). Some persons seemed to think that it would pay; but he differed from them. If it would not pay a private individual, still less would it pay a public company, seeing that public com-

panies were obliged to have a staff of officers, a secretary, a treasurer, meetings, and other sources of expense (laughter). If a cultivator were let out on hire, every one would want it within a month or six weeks after harvest, and at no other time; and what would be received was unlikely to pay a fair interest on six or eight hundred pounds (Hear, hear). There would be more applicants than could be supplied at that particular time of the year. Another difficulty was, that the removal of tackle from place to place would involve a great loss both of time and money. It was very desirable that the farmers who wished to carry on steam-cultivation on their own account should take care to keep a proper staff of men, and not be continually changing. He had had one staff from the first, and had had no more trouble with steam than with horse cultivation. He declined to express any opinion as to whose tackle was the best. Indeed, he did not think any kind of tackle was the best for all descriptions of land (Hear, hear). Every farmer must judge what tackle was best for his own land; a person who had got a very strong, sour, tenacious land, manifestly requiring a different kind of tackle from a light-land farmer (Hear, hear).

Mr. WATTS (Orlbury, Northamptonshire), said: After upwards of six years' practical experience with a 14-horse Fowler's traction engine, and a set of Fowler's tackle, comprising a seven-time cultivator and a four-furrow plough with digging breasts, and all other necessary appendages, on a farm in his occupation, with nearly 600 acres arable land, he deemed it necessary to change the system twelve months the last autumn, and he purchased another 14-horse Fowler's engine, with a winding drum, and had a winding drum put on the old engine, and the clip-drum by which with one engine he got the pull removed. Whilst he was making these remarks, in justice to the firm from whom the tackle was purchased, he begged to state that as far as his observation extended the old engine was as good as a new one, although his farm being principally strong land and very uneven, it had had some fearfully heavy strains upon it. His reasons for adopting the double-engine system were, that his area of land was not sufficient even for the single set, and that if he had the double set he should do his own work and also some for his neighbours; and in that he had not been disappointed, having earned nearly £400 since April (cheers), besides doing all he required on his own farm, and the tackle was now in winter quarters. The simplicity of the double-engine set, and the facility with which they were enabled to get about the country and set to work were so great that he must candidly confess they exceeded his most sanguine expectations. With regard to the round-about system he had had his eyes open, a neighbour having a set on an adjoining farm; and up to the time he purchased a second engine, taking the cost and everything into consideration, he believed it paid him better than mine. But he always looked upon it, and did now, as a make-shift. He believed the double engine set was as perfect as it could be. An improvement can be made in the implements, and he expected to-morrow to see an implement for crossing land when it had once been broken up, that would greatly supersede the balance cultivator. With regard to the paper Mr. Clarke had read this evening on the "Present Aspect of Steam Cultivation," he thought he could not do better than give a little of his experience, and the progress he had made, together with the mistakes he conceived he had made. In the first place, when he commenced with the tackle the farm was very ill-suited to it, which to his sorrow he soon discovered. The fields were small and very irregular, the hedges very crooked; but worst of all, the greater part of the land lay on high heaps. And then he did himself some considerable amount of harm by using the plough

before he had the cultivator, and in order to plough it fairly in the furrows he had to go in 9 to 10 inches on the ridge, which at the time he did not think would do harm, but to his sorrow he found it did, turning up poor hungry clay. He conceived that to know how to use a steam-plough properly required a great deal of experience. When he purchased one first, he thought, as a good many people do when they get anything new, that it was going to do everything, and that he should hardly require horses at all; but now he had come to the conclusion that it was best used as an auxiliary (Hear, hear). He did not recollect in any one instance ever doing harm by the use of the cultivator for the ensuing crop; but he had by the plough. And he scarcely ever used the plough but to break up the land in the autumn that had got too lie through the winter, and then in a great many instances he preferred the grubber. He believed there was a great future for the steam-plough or cultivator; but the outlay was so great, and the time was short, being upon an average little more than half the year. What he considered should be done, and it would be ultimately to their advantage, was that large landowners should purchase for the use of the estate (Hear, hear). This might be made to work well under proper regulations. Every inducement should be offered to a tenant. A 12 months' interest in the soil would not justify so large an expenditure and so much trouble (Hear). One great drawback to steam-cultivation was the men employed to work it. If the work continued all the year round there would not be nearly so much difficulty; but they found, after putting men to that description of work and taking them from farm-work, that they had got too big for their clothes—in other words, they were greatly spoiled for agricultural labour (Hear, hear). But the double-engine set was so simple that his had been worked this year by engineers, of whom No. 1 never drove an engine until the autumn of 1866, and No. 2 not until the spring of this year. The ploughman was also a new hand. Of course the great question, after all, was—What was the extra produce? (Hear, hear.) A very old and respected neighbour of his used to say to him when a lad, "Boy, plough deep whilst sluggards sleep; you'll then have corn to sell and to keep!" But then he must add one other item: Put on the land good manure and plenty of it, and then he believed they would succeed.

Mr. JOHN HEMSLEY (Skelton, Newark) said the best way of applying steam to the cultivation of the land on small occupations appeared to him a very important question. He did not believe in the letting-out system on such farms, because under that system the apparatus was not on the farm when it was most wanted, and the charge much higher than on large farms (Hear, hear). Nor did he think that steam-cultivation would make much way until agriculturists could see that horse-power might be greatly diminished. He wished to bear testimony in favour of Mr. Greene's mode of farming his land by steam. He had had the pleasure of seeing the thing carried out; and Mr. Greene's farm was one of the best that he had been over; while the cost of cultivation was less than that of many other farms in the country. He thought Mr. Greene's remark that an ordinary man did as well as an engineer, would not always prove correct. (Hear, hear.) It would, he believed, be found that the best man they could get to manage a steam-cultivator was the cheapest. (Hear, hear.) To put an engine in the hands of an unskilled man was a rather serious matter. Having tried steam-cultivation on a small farm, he must say that the more he had tried it the better it seemed to answer.

Mr. JOHN THOMAS (Bletsoe, Beds) said he had had some experience of steam-cultivation. Some years ago, when it was said there that it could be done at from 3s

6d. to 5s. per acre, he took exception to that view. He now took exception to Mr. Clarke's assumption that 70 or 80 acres of land could be cultivated in a day. In his opinion it would be well to keep within the mark. Having, however, commenced steam-cultivating this year, he had found that he could cultivate his land at something like 5s. an acre, but that amount exclusive of wear and tear and interest on first outlay. He employed Howard and Smith's combination, manufactured by Messrs. Howard, and the result was satisfactory. It had been stated that evening that horses had cultivated 12 inches deep. Having been a farmer between 30 and 40 years, he had never seen a plough that would turn over a furrow so deep. Instead of employing six horses for one ploughing, he had employed three horses first, and then three more followed in the same furrows, the last plough without a turner to move the subsoil without bringing it to the surface, and the advantage of this mode of proceeding was seen for years after. To cultivate land deep at every turning of the furrows was, in his opinion, a mistake; once in the course, for fallow or root crop, was as much deep ploughing as the land required. Every farmer must judge for himself whether his land would be best with 4, 6, or 12 inches; but he thought that very little land would bear 12 inches, and he feared that young farmers might be misled by what had been said on that subject. It was perfectly ridiculous to say that land should always be cultivated at a fixed depth. In this respect cultivation resembled drainage. He had drained 6 feet deep and he had drained 8 feet, and he thought that on clay land the latter answered as well as the former. In such matters they must be guided by the nature of the soil: that was the experience of all practical men, and young farmers would do well to bear it in mind.

Mr. JAMES HOWARD (Bedford), in response to a general call, said he could assure them that he had very little to say, having come there to listen to others. The question before them was the present aspect of steam-cultivation. He took it that the aspect was more cheering now than it had ever been before. Its progress no longer depended on the writings of his old friend Mr. Smith, or on the publications of manufacturers; they now had men like Mr. Greene coming forward, to bear independent testimony to the efficiency and thorough utility of steam-ploughing. They had also the Report of the Royal Agricultural Society, which had been referred to by Mr. Clarke; a number of men, of undoubted integrity and high-standing had made inquiries for themselves throughout the length and breadth of England, had placed before the public a mass of facts which a man must be very sceptical indeed if he did not believe in (Hear, hear). These gentlemen had visited almost every district in England, had made inquiries on the land, not only of landowners, but of tenants who had purchased tackle, and there was one universal testimony to the success of steam-cultivation (Hear, hear). He believed one thing had thrown back very much the spread of steam-cultivation in this country; some of the people who had purchased steam-tackle had not themselves derived advantage from it; they had, by endeavouring to get over too large a surface, sacrificed one of the main benefits of steam-cultivation, namely, depth of cultivation. He knew many cases in which, not only the owners themselves, but the whole of their neighbours had been disappointed at the results. It did not matter whether they drew an implement through the soil six inches deep by horse-power or by steam-power, the results would be the same in the main. But the great advantage of the giant arm of steam was that it enabled the possessor to get into the soil, loosen it, and thus prepare it for the crop. He agreed with what Mr. Watts had said that night about ploughing too deep; but he did not believe it was possible to

loosen the land too deeply (Hear, hear). He quite concurred with Mr. Greene that what steam had done for heavy land by making it more porous it would do for light land by helping it to retain moisture. The further they went toward the sunny south, the more would they find the practice of deep cultivation to prevail. In the south of France, where there was a very dry climate, some ten or a dozen bullocks were seen ploughing 15 inches deep, in order that the soil might be enabled to retain moisture, which it could not do if the ploughing were shallow. His friend, Mr. Hemsley, spoke of the necessity of having a skilled mechanic to manage an engine. He (Mr. J. Howard) dissented from that view altogether (Hear, hear). Having had considerable experience in the employment of engine-drivers, he had found that the best course was to select a sharp intelligent labourer on the farm, give him a proper list of instructions to guide him, and then leave him to do the work. If they had a skilled mechanic, they might find that he knew a great deal more than was in the book, and a great deal more than anyone could tell him (laughter). He had never had any difficulty in finding on the farm a man of sufficient intelligence for the purpose. He had seen Arabs in Egypt driving an engine as well as any locomotive driver in the world could do it (Hear, hear). He remembered sending a man to the West Indies as an engine-driver for twelve months. About six months afterwards the man turned up again in this country; and, on his asking him why he had returned so soon, he replied, "I was not wanted any longer; the niggers could manage the engine quite as well as I could" (laughter). So much for the employment of skilled mechanics. One word about his (Mr. J. Howard's) own practice. He did not pursue the same course as was adopted by everybody else. He was perhaps better situated than Mr. Greene in reference to work at harvest time. He engaged a set of men for the harvest, and immediately the fields were cleared they went to work at the ploughing. They made very long days; for the steam-plough was a fine-weather implement, and there was really no hard work for the men about it (Hear, hear). He expected his men to be up about sunrise, and they did not leave off till about sunset, doing as much work within the time as possible. On principle he used the steam cultivator for breaking up the whole of his stubbles. He broke them up once; if they happened to be foul he crossed them. He did not touch them again till after the wheat-sowing, and they lay in the roasting sun or exposed to the pelting rain, as the case might be. He then put in a double-breast plough, worked by horse power, for he held that steam was not entirely a substitute for horse power, but an auxiliary (Hear, hear). He could not farm without a considerable number of horses, and it would not pay to keep the horses in the stable while there was any profitable employment for them on the farm. He found that a pair of horses could, with a double-breast plough, do 2½ acres to 3 acres per day, and it was cheaper to employ the horses than to fetch out the steam engine to do the same work. If they tried a double-breast plough for ridging in this way, they would, he felt sure, be satisfied; a large surface was thus left exposed to the atmosphere; the manure was carted on the land between the ridges; in spring the land was not moved again, and for the last three years he had never missed getting a good plant of turnips (cheers).

Mr. SEWELL READ, M.P., said, as his experience in steam cultivation was but small, he should not have ventured to trouble the meeting with any remarks did he not desire to answer two questions which had been put, one by the chairman and the other by Mr. Smythies. The application of steam cultivation to small farms was, it must be admitted, a difficult task. As regarded large farms it

might be regarded as an accomplished fact. The only experience which he had had was in Norfolk. Last year Messrs. Fowler sent down to his county two 12-horse engines, with all the necessary apparatus for complete steam cultivation, and he believed that with the exception of about a month in winter, when the men went home to Leeds for a frolic, the machinery was constantly employed. It had gone from place to place over a large portion of Norfolk, and had even got into the adjoining county of Suffolk. What was the pecuniary result he could not say, but the men seemed perfectly satisfied. He observed that in one field—it was a barley stubble—the plough went 12 in. deep. It was a stiff clay land. In order to test the possibility of growing wheat with such deep cultivation, he sowed with wheat and heavily manured, and the result was that he had a very good crop indeed—4½ qrs. to the acre on land which had always been considered wet land. That field was a 10-furrow ridge, or stretch; and though it became a perfectly flat surface, he never saw a drop of water standing on it during the whole of the winter. In another case there was one portion of a field dug up with the steam cultivator 12 inches deep; while another portion of the same field was ploughed with horses. The result was that there was one quarter more wheat grown where the land was ploughed with steam than in the other part. He knew that appearances were apt to be deceptive in that respect; but he was quite sure that there were four bushels more. He quite agreed with Mr. Howard that the great value of steam cultivation was not so much in the quantity of ground gone over as in the increased depth. Very few people would be so foolhardy as to plough land a foot deep, when the sole effect would be to turn up an unmanageable subsoil; but he never saw any field, whether the land were light or heavy, take any harm from deep cultivation.

MR. JOHN WILLIAMS (Baydon, Hungerford,) said it was 16 years ago since, at the Baker-street Show, he purchased his first portable engine. It was delivered in the month of January, and in the month of May following, whilst it was grinding at a much less speed than thrashing, the thought struck him that if the speed were reduced to the plough pace, what an advantage it would be to cultivate the land by steam-power. From that time to the present he had been engaged in steam ploughing. After having had three years' experience of steam cultivation, he read before the Club a paper in which he gave the results. About three years since Mr. Morton read a paper on the same subject, in which he complimented him on the correctness of the predictions which he ventured upon so many years before. It was twelve years ago last May that he read that paper at the Farmers' Club. He then estimated the cost of steam cultivation at 5s. 3d. per acre, and that estimate had been borne out by the experience of numbers who had used it. A great deal had been said that evening about using steam as an auxiliary. That might appear a very excellent idea; but it would be seen from his paper (a copy of the Journal he had with him, and with their permission he would quote a part) that he had, in introducing steam cultivation, a higher view than merely to use steam-power as an auxiliary. "It was calculated that there were in Great Britain 47,000,000 acres under cultivation, and, supposing four horses to be required per acre, 1,888,000 horses would be required for cultivation. He thought that if steam were used in the different processes of farming to which it was applicable, one-third of that number of horse-power might be dispensed with (Hear, hear). It would be seen from the above calculation that, by dispensing with one-third of the horse-power necessary to cultivate the soil, a saving in corn and fodder would be effected to the amount of £18,800,000. Now, if he took the price of beef and mutton at 7d. per lb., or

4s. 8d. per stone of 8lbs., the food so rescued from consumption by the horses would produce, assuming that they would not be fed at a loss, 80,571,500 stones of meat; or 805,715 oxen, of 100 stones each; or 8,057,150 fat sheep, of 10 stones each." This was his idea when he wrote that paper twelve years ago, and he still thought it should become a national benefit by a substitute to a great extent of oxen and sheep for horses. Having tried every system during the last 15 years, he was prepared to affirm that none was so good as that with two engines, one at each end, with a direct pull across the field, and only one rope. The tackle then moves itself; it must go from field to field, and be ready to begin work within ten minutes of being introduced. Upon that system there would be a large margin of profit when let out to hire, and he did not believe that any other mode of working would answer for hiring purposes. As regarded the effects of steam-cultivation, he would observe that he had never grown more than he did this year. Unfortunately he could not say that the yield would be good, but the bulk was large. If they visited his locality they would find his neighbours with ridges, some of which were ten strides wide and others five, while he himself was without a single furrow in the field. There was no water to be seen on the surface of his land, though his farm was strong clay; and he had grown better barley since he used steam than he ever did before (Hear, hear). He (Mr. Williams) would corroborate what Mr. Clarke had said with respect to the enormous amount of work done by steam-cultivators at Bury St. Edmunds; and he could refer to an account of what Messrs. Fowler's machine did in France, which went far beyond even what Mr. Clarke had mentioned. In writing on the subject of the experiments to which he alluded in connection with the French Exhibition, a writer in the *Standard* said, "It is clear, however, that the quickest, best, and most economic results can be got from the double-engine system, and that the additional expense of a second engine is very soon outset in the produce of its power. Mr. Fowler first worked with his small balanced cultivator; then with his five-furrow plough, to a depth of 14 inches over a total width of land of five feet; after this followed his large turning cultivator, taking a grand breadth of full five yards; then his magnificent eight-furrow plough, ploughing eight inches deep its light loose course of ridges and furrows along a breadth of seven feet, and upturning its two acres an hour with ease. How the crowd watched and followed up at a good smart step this wonderful work! How quietly but earnestly the sober ejaculations of admiration dropped from the Frenchman's lips! They felt and admitted the Englishman was doing unrivalled execution; and they looked forward to the gigantic stride that France must soon begin to take, impressing with gravity every face. The men there were men of thought—men of experience in their own national systems; and never, perhaps, has a more compact assemblage of business-like and scientific farmers been gathered together, even at our own prominent meetings in England. Larger numbers we have had, and able thinkers and workers; but no more select or earnest crowd. But when the splendid harrow took the field and paced its 400 yards across, sweeping its 30 feet in breadth at a rate of more than six miles an hour, the scene became indeed exciting; and the name of Fowler attained to highest renown in France. His success was surpassing." He thought that after that testimony the club would be disposed to give full credence to the statement of Mr. Clarke. That testimony showed, too, that in order to make the most of steam-power, they must do away with the pulleys, sheathes, &c., causing a direct action—that there must be a direct pull from one end of the field to the other. When he commenced steam-cultivation there was not a single individual now con-

nected with it that had anything to do with it. The names of Fowler, Howard, Smith, &c., were not known in connexion with it; and when he read his paper giving three years' experience, only Lord Willoughby d'Eresby, the Marquis of Tweeddale, and Mr. Usher, of Edinburgh, were using steam ploughs. So he thought he could, without fear of contradiction, claim to be the father of steam cultivation, and as such he was truly proud of his offspring.

Mr. R. C. RANSOME (Ipswich) said the question had been asked that evening, How steam-cultivation might be made accessible to small farmers? Several gentlemen had spoken on that point, as agriculturists: would they allow him to speak for a moment as a manufacturer? It had been said that manufacturers had sent machinery about different parts of the country, Norfolk having been specially mentioned. He knew nothing whatever about their success there; but, as a manufacturer, he must be permitted to say that there were many reasons why steam-cultivation could not depend upon such a system of working. It could never become general because a manufacturer had not, nor could he procure, the staff of men who would be qualified to work upon the land week in and week out, and then return contentedly to the towns which were their homes. He could not induce them to work in that way, except by giving them very large pay; and if he gave large pay, he could not compete with those using horse power who had men living in their own parishes, and who were not compelled to pay at the same rate. Besides, he submitted that it was not the business of the manufacturers of steam-ploughs, any more than the manufacturers of other kinds of machinery, to introduce their implements in the way which had been suggested. If a plan could be devised by which manufacturers could share the profit which the farmer derived from the steam tillage by increased crops and otherwise, perhaps some of them might find some means of meeting the demand; but it appeared to be attended with numerous and enormous difficulties. It had been remarked, that men who thrashed with steam-power should also be enabled to plough with steam-power. Steam thrashing was carried on to a large extent by means of credit, the capital being supplied in many cases by bankers. It could not be supposed that manufacturers generally could find capital to be employed in that way in steam cultivation. The formation of companies for that purpose was attended with tangible difficulties; the most feasible plan seemed to be by the Association of men holding contiguous farms. If difficulty arose among such partners as to priority of use, the question might in the first place be settled by ballot, in the next place by friendly arrangement; but, in his judgment the best way of settling the matter was by letting the highest bidder have the machinery first. The man who, in the month of May, made the best offer for the tackle in August, should have the use of it then, and so on according to the price they were ready to pay—thus increasing the dividend available for the partners. He thought that the use of steam might be greatly extended by the adoption of some system of that kind.

The CHAIRMAN observed that in opening the proceedings he remarked that having had no experience in steam cultivation himself he could not give any practical experience beyond what he had seen on other farms. He regretted that no one seemed to have been able to answer his question with regard to the comparative yield of crops this year with steam cultivation and ordinary ploughed land. As respected steam cultivation on small farms, the observations of Mr. Greene were very valuable in-

deed. He was fully aware that what had been said by Mr. Ransome with regard to the present state of steam-thrashing was in many instances too true. He knew there were great difficulties in establishing a company or in making arrangements between individuals for the satisfactory and profitable management of steam-power on any large scale. With regard to cultivation by steam, he could say from his experience, from observations on many farms, that they could not cultivate too deep, either upon heavy or upon light soils. But he knew that they could plough foul land much too deep (Hear, hear). Within the last few weeks he had walked over a very highly-cultivated farm, or one which was supposed to be so, in the occupation of a gentleman who had often expressed his opinion before the Royal Agricultural Society and elsewhere. In doing so he found sufficient couch in small quantities to stock the farm if neglected; and on inquiring the cause of this, he found that it was entirely owing to deep ploughing some years ago (Hear, hear). He was told that the persons employed on the farm had never been able to eradicate the couch since that deep ploughing was done (Hear, hear).

Mr. J. A. CLARKE then replied. He said the questions which had been asked that evening and the difficulties which had been raised were all met in the Report of the Royal Agricultural Society to which he alluded in his opening remarks. As to the practicability of cultivating a farm of 200 acres with steam profitably, all he could say was that farms of that size had been profitably cultivated by steam (Hear, hear). For instance, No. 48 was a case in which the farm consisted of 222 acres, and the occupier, Mr. F. W. Bignell, of Loughton, Stony Stratford, was thoroughly satisfied. No. 57 was the case of a farm of 285 acres, in the occupation of Mr. Jabez Turner, of Haddon Grange, Yaxley, Huntingdonshire, and there again the occupier was perfectly satisfied. No. 72 was the case of a farm of 220 acres in the occupation of Mr. J. E. Stainer, of Uppington, Shropshire, a very able and business-like manager, who said that he had derived very great advantage from steam cultivation. No. 81 was the case of a farm of 250 acres, the occupier being Mr. George Pocock, and the land near Swindon, one of the most successful steam-ploughmen in England. No. 89 was that of a farm near Boro-bridge, in Yorkshire, the occupier being Mr. Henry Hawking; and in his case the testimony was satisfactory. As to letting out machinery, he was inclined to believe that with proper management it would pay extremely well. He was acquainted with several persons who said they had found it profitable to let out tackle; and if they said that, he did not see why their words should be doubted. It did not pay many of those who did not make it their business to let out, and perhaps that was the explanation of some failures which had been referred to. He had met with several cases in which an agreement between three or four farmers to work the same apparatus had been found to answer extremely well. Of course there were certain rules laid down, and if a man broke them he did not suppose there was any difficulty in getting some one to take his place (Hear, hear). The beauty of such partnership was that a farmer got all the requisite steam work done with only one-half, or one-third, or one-fourth of the outlay in machinery, and yet displaced the full proportion of horses.

On the motion of Mr. READ, M.P., thanks were voted to Mr. Clarke for his paper; and on the motion of Mr. SKELTON, seconded by Mr. DRING, a vote of thanks was also awarded to the Chairman.

THE FARMERS' CLUB DINNER.

The annual dinner of the members of the Farmers' Club took place on the Tuesday evening, at the Salisbury Hotel, Salisbury-square, under the presidency of Mr. E. Little, of Lanhill, near Chippenham. The attendance exceeded that at any previous dinner of the Club, and the proceedings were altogether extremely satisfactory. The Vice-chair was occupied by Mr. C. S. Read, M.P., the Chairman Elect.

In proposing the toast of "The Queen," the CHAIRMAN adverted in congratulatory terms to the fact that her Majesty appears this year as an exhibitor at the Smithfield Club Show, in her own name; an allusion which elicited great cheering.

After the inaugural and the other loyal and national toasts had been suitably proposed and responded to, Mr. Frank Sherborn answering for the Army, Navy, Militia, and Volunteers,

The CHAIRMAN proposed the toast of the evening, "Success to the Farmers' Club." He observed that it was now nearly five-and-twenty years since a few gentlemen met together in the Old York Hotel, in Bridge-street, and established the Club, with the view of thereby forming a bond of union for the agriculturists of the country, and furnishing them with accommodation whenever, for business or pleasure, they visited the City of London. The result was, he believed, that most of those who joined the institution had derived the greatest benefit from it, by assembling together and mutually interchanging their ideas, not only at the monthly discussions, but in the social intercourse of the Club-rooms. One of the principal objects of the formation of the Club, besides the personal accommodation provided for them when they came to town, was the lectures and discussions on agricultural topics. A quarter of a century, however, was enough to wear a subject even more prolific than that of the details of practical agriculture threadbare; and he feared that the subjects discussed had some time since become a little threadbare. But to obviate that inconvenience, during the few past years the committee thought it wise to introduce other matters than those connected exclusively with practical agriculture, and the experiment had been attended with a fair measure of success. Need he remind them of the paper of Mr. Nockolds, on the establishment of a Board of Agriculture; the paper of Sir George Jenkinson, on the turnpike question; and last, though not least, the capital paper, followed by a useful discussion, upon the management of benefit societies in rural districts, by Mr. Charles Howard, and which had borne good fruit, as attested by a large correspondence which had since taken place on the subject (cheers)? For his own part, he was of opinion that there was nothing in the world to prevent their discussing any question whatever, even though it were of a political nature. In fact, they might discuss the next Reform Bill if they chose. There was nothing in their rules to forbid it. Indeed, there were many subjects having a slight political bearing, the discussion of which would tend greatly to the advantage of the Club, instead of impairing its usefulness or running counter to the objects for which it was founded (Hear, hear). With regard to the numerical and financial position of the institution, he was glad to say that they had been steadily progressing in the course of the five-and-twenty years they had existed, alike in point of numbers and in point of finance. At the present moment they numbered about 600 members, and on the previous day 18 new members were nominated for election at the next committee meeting (cheers). And if further proof were wanting to show what was the status of the Club, he thought the large attendance of that evening was a convincing argument that the interest of the farming community in the institution was as great as ever (loud cheers). As to their finances, year by year they had gone on investing their money, until now at the end of the year it appeared that they had £1,000 secured in the public funds. This he looked upon as a creditable fact at a moment when they saw so many societies going backward and coming to grief. He trusted, then, that the Club would continue in its prosperous career, that younger men would constantly join it and participate in its benefits, and that it would be found useful to many future generations (loud cheers).

Mr. GOLDNEY, M.P., on rising to propose "The Chairman," said he had recently read an article in a popular magazine which described the situation of the British farmer as that of the happiest of men. If, as the writer appeared to think, the possession of a good cellar of wine, a well-stocked farm, plenty

of sport, and, above all, a good wife, were elements in worldly happiness, he could congratulate the Chairman on having an enviable lot; for all these he knew him to possess (cheers). Moreover, Mr. Little was highly-respected by all his neighbours. When disputes arose on questions connected with the business of farming, whether between the outgoing and the incoming tenant, or between either and the landlord, the parties disputing seemed to turn instinctively to Mr. Little, and the result was that his excellent friend was constantly called upon to act as arbitrator in such matters. In such cases his decision was generally regarded as final, and in that way a vast amount of litigation was avoided. That the Chairman was a very suitable President for associations of that kind he had seen illustrated in Wiltshire. In that county there was an association which was with one exception the largest of the kind in the West of England, having been established for upwards of thirty years and distributing £300 a year in prizes designed for the encouragement of agriculture and the reward of deserving agricultural labourers; and the very backbone of that society was their worthy Chairman (cheers). One or two words with regard to a topic alluded to by the Chairman in the speech which he had just delivered: he referred to the nature of the discussions which took place in that Club. He quite agreed with him that up to the present time the agricultural interest had not shown itself in a sufficiently prominent character to command the attention of the Legislature as other industrial interests in this country had commanded it (Hear, hear). There were many topics which it was absolutely essential that they should attend to, more particularly in a great central society like that. He had thought for a long time on the question of rating. That was a very material question, as it affected the agricultural interest. In the first place, every improvement that farmers were making, every addition to the value of the land by means of artificial manures or improved culture by machinery, or otherwise, immediately added to the annual value of the land, and it was rated accordingly (Hear, hear). Now, if a manufacturer got improved machinery, or bought his raw material cheaper, and thus increased his profits, no additional rates were imposed upon him: he still paid the same assessment on his factory. During the last year a very long discussion had taken place in Parliament with regard to rating, under a Bill called "Mr. Hunt's Valuation Bill," but that Bill did not apply at all to the principles of rating; if only applied to the principle or mode of collecting the money. Here they were in the year 1867 still maintaining the large and growing population of this kingdom on the principles of assessment which existed in the reign of Queen Elizabeth. Not a single instance of that sort was to be found in any other part of the national arrangements (Hear, hear). In the year 1867 the agricultural body was subject to the principles of the valuation of property which prevailed in England 360 years ago! (Hear, hear). At a period when the population of the kingdom did not amount to five millions; when trade and manufactures were of such small importance as hardly to be considered; when there were no coal mines, no banks, no public companies; when Liverpool was not in existence; and when the whole machinery of trade was a mere bagatelle, land being the chief property of the kingdom had to bear nearly all the obligations of property. But when the trade and manufactures of the country had reached such vast proportions; when manufacturers, bankers, and others were realising such enormous fortunes; when so many people were receiving such large incomes from the public debt of £300,000,000, from railways, and from other sources; it was a serious question whether the principles of rating which were right formerly should be applied still. As matters now stood, every improvement which agriculturists made on the land was reacting as it were against them; and, in an association like that, it was fair matter for discussion whether such a state of things should be allowed to continue (Hear, hear). The question of turnpikes also required to be further ventilated (Hear, hear). There was another matter which he should like to mention—a matter connected not so much with the farmers in their relations to the public as with farmers in their position as tenants. He had been for a great many years a very strong advocate for leases, and he thought the time was come when, whether as individuals they farmed with or without leases, they ought seriously to consider the subject of those absurd restrictions with regard to cropping which existed in so many places. He believed that nine hundred and

ninety-nine thousandths of those restrictions were framed within the walls of Lincoln's Inn by parties who know no more about the cultivation of land than that table (Hear, hear). They were put into precedent books which lawyers used, and hence they had continued to the present time; and, unless the matter were properly discussed, there was not likely to be any remedy for that evil. Having repeated that in his opinion such subjects as he had mentioned ought to engage the serious attention of the Club, the hon. gentleman concluded by calling upon the company heartily to drink the health of the Chairman.

After a most cordial response to the toast,

The CHAIRMAN acknowledged the compliment. He said he felt the greatest diffidence in taking the chair at the beginning of the year, knowing as he did the importance of the office, and how inadequate he was to the performance of its duties; but he had endeavoured to do his best, and hoped he had given satisfaction (cheers). He felt very much flattered by the way in which his friend Mr. Goldney had proposed his health. Much more was said of him than he deserved, and he felt bound to acknowledge that the excellent assistance which he had had from the committee and from their worthy secretary had greatly aided him in the office of chairman.

Mr. ALBERT PELL, in proposing "The Royal Agricultural Society of England, the Highland Society of Scotland, and the Royal Agricultural Society of Ireland," said he hardly knew why one who had so recently been elected a member of that club should have had conferred upon him the honour of proposing that important toast. Perhaps one reason why he was selected for that duty was that it would afford him an opportunity of diversifying the character as a speaker in which it had been his lot to appear a week or two ago (laughter). He was very glad to accept the invitation, because in the toast which he had to propose his recollection ran back to earlier and he might say with truth happier times than those which he passed through in the month of November. Like the dial of Ahaz, backward ran the shadow of his days to the time when, being just of age, he went to one of the earliest meetings—he thought it was the second—of that noble institution, the Royal Agricultural Society of England (cheers). With regard to the other two sister societies, the two other Graces, if he might so call them, or the two other nursing mothers of Agriculture, he had little to say, because it had never been his fortune to attend a meeting of either of them. But this he might say with truth, that all three of the societies included in the toast kept before them the same noble objects for attainment: all were earnestly endeavouring to carry out the noblest effort in which men could be engaged—that of contributing through the improvement of agriculture to the welfare of their fellow-countrymen (cheers). He would appeal to the practical agriculturists whom he saw before him, whether those societies had not been successful in the objects for which they were formed. He saw before him gentlemen who as exhibitors at some of the earliest meetings of the show could almost have carried all they intended to show on the top of a stage-coach or in a dog-cart (laughter). These men had now obtained a European fame; they had contributed largely to the improvement of British agriculture, and had at the same time made their names known throughout Europe and throughout America. How much of that was due to these institutions it was not for him to say; but he might observe that but for the show of the Royal Agricultural Society, held in various parts of England, the wonderful inventions and improvements in agricultural implements, instead of being diffused through the length and breadth of the land, might have remained comparatively unknown (cheers). One word about the character of these three societies. These institutions were now old, and nothing had occurred during the whole of their existence to disgrace them. As an Englishman living near the end of the year 1867 he could earnestly desire that all English societies had as noble objects before them for attainment, and pursued them with the dignity and peaceful composure which these societies had exhibited. Avoiding politics, avoiding everything that was likely to irritate persons employed in trade or manufactures, they had steadily pursued their useful career, and had kept on their course manfully and well. Long might they continue to do so! He would not detain the company any longer, but conclude by thanking them for the handsome way in which they received his name as the proposer of the

toast, and expressing his confidence that they would give a similar reception to the name of the gentleman who was to respond. That gentleman was one to whom the agriculture of England and of other parts of the world owed a great deal; and when he told them that his name was Mr. Owen Wallis, he was sure that would be enough (cheers).

The toast having met with a fitting response,

Mr. OWEN WALLIS said he regretted very much that he was the only representative of the Council of the Royal Agricultural Society present, for he was sure that if others had been there a better choice would have been made, and it could not have fallen to his lot to return thanks for the toast. He, like Mr. Pell, knew very little of the two sister societies which were coupled with the Royal Agricultural Society of England. He had attended one or two meetings of the Highland Society of Scotland, but he could not say that he was very well repaid for going so far to see what was exhibited. There were some good animals, but they were not very numerous. Like Mr. Pell, he attended the second meeting of the Royal Agricultural Society of England. He was, indeed, a member of that Society prospectively; he became a member before the society was actually formed, on condition that the object was carried out. He attended the second meeting, which was held at Cambridge, and he was quite sure he spoke within bounds when he said that that room would have held all the implements exhibited on that occasion. There was only one attempt at a stand for engines, and that belonged to Mr. Ransome; now, as they were all aware, it took miles of shedding to cover the implements in the Society's show-yard (cheers). The Society had, as they all knew, laboured under considerable disadvantages during the last two years, owing to the great scourge which had fallen on this country in the cattle plague. The shows had been deprived of their chief attraction—the beautiful animals which were previously exhibited, and consequently the interest attached to the shows was very much diminished (Hear, hear). He was sorry also to say that the receipts from the exhibitions had very much diminished, and that during the last two years the society's expenditure had very much exceeded its income. He hoped that in the next year they would make up the lost ground. They were going to one of the best localities, one of the best towns, in England; the site for the show would be admirable; and he trusted they would still continue to avoid the cattle-plague and have most successful meetings. (Cheers.) With the view of keeping clear of a return of the cattle-plague, it behoved the farmers of England to bestir themselves in order to secure the passing of the bill which had been proposed providing for the slaughtering of foreign cattle at the ports of landing, and also for the quarantine of any animals which might be intended for store stock. (Cheers.) Unless every county in England, all the agricultural societies in the various districts, petitioned Parliament most strenuously in favour of it, there could be little hope of that bill being carried. (Cheers.) Let them all do all they could to ensure the success of that measure. They were at present under great disadvantages with reference to the Metropolitan Market. As all present knew, all animals brought to that market must be slaughtered within the limits of the metropolitan district; they could not be taken away; and consequently the graziers were deprived of some of their best customers. He hoped that, as the result of the efforts which would be made, farmers and graziers would soon be placed in a much better position as regarded their cattle than they now occupied. In conclusion, he thanked them for the attention with which they had listened to him, and on behalf of the three societies for the manner in which they had received the toast.

The Rev. E. SMYTHIES said he was sure the toast which he had to propose would be received with as much cordiality as any preceding one; it was the health of Mr. Clara Sewell Read, the valued member for Norfolk. In proposing that toast he might venture to announce that Mr. Read was chairman elect of that club for the ensuing year; to which he might venture to add that the hon. gentleman had also that day been elected vice-chairman of the Central Chamber of Agriculture. (Cheers.) In fact, when he considered Mr. Read under his various aspects, he was reminded very much of one of those splendid animals whom they had seen that day in the showyard, having first a piece of red ribbon, then a piece of white, and, lastly, a card referring to all sorts of medals and cups. (Laughter.) He might remark that there

was an animal in the showyard on that occasion which had brought £125 away with him from Birmingham, and gained £75 more that morning in the showyard at Islington. He thought Mr. Read would equal all that, and a good deal more. Having thus referred to Mr. Read's present merits, he might perhaps be allowed to say a word in relation to the dim and distant future. Reference had been made that evening to one of the subjects brought before the club within the last year, namely, the necessity for the establishment of a Board of Agriculture. He, for one, considered it very desirable that such a board should be formed, and he also thought it was a great advantage to them to find the future Minister of Agriculture ready made to their hands. (Cheers.) He could not say in Mr. Read's presence all that he might say in his absence, but he could not help alluding to something that was said with regard to him by Mr. Gladstone. Whatever might be their opinions on political questions, they must all feel that Mr. Gladstone was one of the ablest statesmen of the present day; and never did the right hon. gentleman speak truer words than when alluding to Mr. Read he remarked that the modesty which was so conspicuous in him when he rose to address the House of Commons was only equalled by the ability which he displayed and the knowledge which he manifested on every subject which he took in hand. (Cheers.) He thought he had now said enough, and more than enough, to commend the toast to the hearty acceptance of the assembled company. He would now propose to them "Their Vice-Chairman Mr. Read, and success to him in his chairmanship during the ensuing year." (Cheers.)

The toast was drunk with great enthusiasm.

Mr. C. S. READ, M.P., said: Mr. Chairman and gentlemen, it has been well said by the great poet that "some are born to greatness, and some have greatness thrust upon them." I need not say that the last case is my own. I consider it a great honour to have been elected President for the next year; but I can say sincerely that I should have been much better pleased had you appointed some older and abler member of the Club. You all know how much my time is occupied with public duties. But I was told, and told very truly, that it was in consequence of the position which I accidentally hold that I was selected so soon for this office. Now, gentlemen, notwithstanding all the kind and good and flattering things said respecting me by Mr. Smythies, I neither expect nor wish to continue in my present position for very many years—I refer to the honour which I enjoy of a seat in Parliament—and can assure you further that I have no wish for the distinction of being associated with any Government department whatever. As my capacity for usefulness is, in my own opinion, now at its height, it is only right that I should accept the office of Chairman of this Club; but I do trust that every member of the Club will make allowance for my defects, and I shall especially rely on the active and cordial co-operation and assistance of the present Chairman, the Committee, and our good Secretary (cheers). Now, sir, it has also been mentioned that I have been elected Vice-Chairman of the Central Chamber of Agriculture for the ensuing year. At first I considered that this would be a hindrance; but I was afterwards told that it might be beneficial by showing the public generally that there was not the slightest antagonism or rivalry between these two great societies—that there was not only room, but a necessity for both. Although it was very difficult indeed to define what subjects belong to each, yet they have no doubt their separate spheres; and while Farmers' Clubs may be regarded as the Chambers of the field, Chambers of Agriculture may be viewed as the Chambers of the State. At the same time I agree with the Chairman that it is desirable that the discussions of this Club should take a wider range, and that both these societies may to a certain extent discuss the same subjects with mutual benefit. Well, now, sir, it has generally been my delight on such occasions as the present to take a sort of review of the parliamentary session, and I wish to look upon this Club as my constituents. It was said the other day in the House of Commons that because the noble lord the member for Arundel happened to be a Roman Catholic, therefore he represented two millions of people in this country (laughter). In like manner, as I happen to be the only tenant-farmer in the House of Commons, I may be supposed to represent all the tenant-farmers (laughter, and Hear, hear). I regret most deeply that my duties are not shared by my friend on my right (Mr. Albert Fall) (cheers). Now, sir, at nearly

all the agricultural meetings which have taken place in the latter part of this year, the principal speaker has observed that politics are strictly excluded, and immediately after he has begun to talk about Reform (laughter). It is almost impossible to refer to the last session of Parliament without mentioning Reform (Hear, hear). Our worthy President has told us that we may discuss a future Reform. I would say one or two words upon the Reform Bill which has already been passed. Gentlemen, I can congratulate you that that bill is passed, and for this reason—that the Reform coach will no longer stop the way of those social and practical reforms which we so much want (cheers). As regards the effects of the new Reform Bill upon the counties, I would observe that one great anomaly and injustice with regard to the county constituencies remains unredressed. I refer to the voting of borough freeholders for counties. But, although we could not entirely destroy those gentlemen, or rather destroy their great influence in the county elections, we have succeeded to a great extent in alleviating the evil, by making it imperative that all those borough freeholders whose occupation in a borough is under the annual value of £10 shall vote in that borough. Again, we have the advantage of getting 26 members for counties, out of the 45 who have been taken away from the boroughs. However, as the county constituencies are increased by about 30 per cent., we may conclude that, in that way, the borough influence in county elections will be very considerably diminished. We are still very inadequately represented in point of numbers, having only 187 members for 10½ million inhabitants, while the boroughs have 308 members for 9½ millions. But still the state of things is better than it was. The old Reform Act gave three borough members to one county member. There will now be two borough members to one county member. I must now pass from that unpleasant subject to one which is equally disagreeable: I mean the restrictions which have been attached to the movement of cattle (Hear, hear). Now the theory of the constitution is that the Queen governs the realm, and that she delegates certain powers to the Lords of the Privy Council. Sir, we go to church—at least, I hope we do—and there we pray for these Lords of the Council; but I can assure you, from my own knowledge, that we pray for the shadow, and not for the substance (laughter). The real Lords of the Council—those who have governed us so long—are a set of officials in Prince's-street, Westminster (Hear, hear, and laughter); and therefore it might be an improvement in our liturgy, if the clergy were ordered to pray that a kind Providence would be pleased to endue Professor Simonds, Dr. Williams, and the veterinary department of the Privy Council generally with a little more wisdom (laughter). Now, sir, what is the doctrine of the Privy Council as regards cattle? It is that we have been defended against diseases by the simple act of inspection (laughter). "Inspection" is their motto. You know very well how the work has been done of late years. These gentlemen tell you that all these diseases are the result of a certain process of incubation, and they are supposed to watch the process of incubation (laughter). But is it not a very remarkable thing that, the great object being to discover the germ of the disease, after studying cattle plague for two years, the very highest veterinary authorities don't know cattle plague when they see it? (Hear, hear). Why, what do they do? You have a bullock taken ill, and a learned professor comes and tells you that its disease is the cattle plague. Then there is despatched a telegram rattling away to summon Professor Simonds; and when he has arrived, he tells you that it isn't the cattle plague (laughter). These are the men who by their inspection are to protect the herds and flocks of Great Britain. What do they do in the end? When they have found the cattle plague, they kill a bullock. What do they do when they find sheep suffering from small-pox? Why, they kill them. What do they do when they find bullocks suffering from pleuro-pneumonia? Why, they kill them (laughter). Why don't they kill the foreign cattle that bring these confounded diseases into the country? (cheers). Now, gentlemen, the Government, or rather the Veterinary Department of the Privy Council, introduced into the House of Lords a Bill called, "The Contagious Diseases (Animals) Bill." After dragging its slow length along in the Upper House, this Bill came down to us about the middle of July, and the Government promised that we should have a day to discuss it—a morning sitting. One Wed-

nesday the Bill was first on the paper. We got a capital House—a House with which we could have beaten the Government by two to one. What was our surprise and chagrin to find nearly the whole sitting occupied with a discussion on the question of extradition. At last the Bill came on, between 2 and 3 o'clock on the morning of the 12th of August. A division was taken on the proposal of my friend Mr. Corrance that the slaughter of foreign cattle at the ports of landing should be compulsory. That motion was negatived by a majority of twelve. But although the Government were victorious, they could not withstand the arguments by which it was supported, and accordingly they gave way. They made all sorts of promises, part of which has been performed, and part remains to be performed. They brought in a bill, which was very good as far as it went, but which must be made still better before it can do all that is necessary. I have no doubt that the chief opponent is the Corporation of London, which, having spent a very large sum of money on its new market, did not wish to lose the interest on its outlay or to build another market. Another powerful source of opposition are the butchers of London. (Hear, hear.) Few people are aware of the influence which these people have with the Privy Council, or rather with the Government officials in Princes-street, Westminster. The butchers of the metropolis have not been playing a very bad game lately. (Hear, hear.) They have been giving us first what they pleased for our cattle and sheep, and they have been charging their customers just what they liked; and of course they have had a very jolly time of it. (Laughter.) But there are other butchers who are not so well off. The butchers of Brighton and other towns near London want to have a great market for the sale of British cattle—that is to say, a market in which British cattle alone are sold, and from which they can be removed to a distance. We may be told, "You are a nice set of fellows; you want to impose all these restrictions on foreigners." We cannot help it; we have tried the experiment with regard to foreign cattle, and we have lost by it; and not only we, but the public also have suffered. (Hear, hear.) I believe that we shall have a great battle to fight about the bill before Parliament; and the measure being at present limited to cattle, I would suggest that it should be made to include sheep and pigs. (Hear, hear.) If you want to make the measure a safe and effectual one you must take care that it embraces all foreign stock. (Cheers.) Independently of our certain knowledge that foreign sheep bring small prices, there is the fact that sheep if not themselves subject to cattle-plague may be the means of introducing it; and if we want to be secure let us demand that both foreign sheep and foreign pigs are killed at the port of debarkation. (Cheers.) There are many other subjects which I should like to mention did time permit. One of these is the Highway Rating Bill, of which Mr. Goldney has spoken. There is another topic, which, if I do not mention, it may be inferred that I have, as far as I am myself concerned, shelved it for another year. Now I am one of those people who, if they cannot do exactly what they could wish, will do what they can. (Hear, hear.) It may have been thought that I ought to have led a sort of forlorn hope on the question of the Malt-tax. Was it to be supposed that, when I saw able and eloquent leaders of my party had a minority on that question, I was going to betray the trust reposed in me by leading a few honest and ardent members to certain defeat? (Hear, hear.) I certainly thought that the best thing we could do was to get the subject referred to a select committee; and, of course, pending inquiry, any further agitation would be useless (Hear, hear.) In conclusion, I have great pleasure in proposing "The Smithfield Club," a useful, a great, a noble institution, and I believe I may add the oldest agricultural society in the kingdom; and I have to associate with this toast the name of an excellent practical farmer, Mr. Tredwell, who, in addition to the fame which he has acquired as a breeder of Oxford Down sheep, has this year come out as the breeder of the best pen of Berkshire pigs (cheers).

After the toast had been duly honoured, Mr. TREDWELL responded to it, observing that he should have preferred obtaining a prize for his sheep instead of his pigs, and that it was impossible for any intelligent agriculturist to visit the Smithfield Show without picking-up some useful ideas.

Mr. G. MARTIN, in proposing "The Local Farmers' Clubs,"

said he hoped they would take care to have some good delegates to represent them in the discussions of the Central Club.

Mr. KILPIN proposed "The Committee of Management," coupled with the name of Mr. J. Dumbrell.

The toast was most cordially received.

Mr. DUMBRELL, after responding, proposed "The Secretary," Mr. H. Corbet.

After a warm response from the company, Mr. H. CORBET, returning thanks for the honour again conferred upon him, said he hoped he should be allowed at once to drop the Secretary and speak of the Club itself. They were now in the midst of the business of the Smithfield Club week, but he thought that if they searched from beginning to end they would find no more spirited or useful gathering than that of the Farmers' Club Dinner that evening (cheers). Whether they considered the speeches of practised debaters in the House of Commons, or those of gentlemen who ought to be debaters in that House (cheers and laughter), they might well feel equal pleasure and pride in the fact that the honourable gentlemen and the should-be honourable gentlemen were members of the Farmers' Club (cheers). An office like his was one of reflective honour. If everything went on well, the Secretary was always supposed to be entitled in some degree to thanks. In that way he occupied that evening a proud position. Everything had gone on well, and especially the dinner, the speeches delivered being of the most intelligent and useful character, and highly creditable to the agriculture of this country. Perhaps he might be allowed to allude for a moment to the speech of Mr. Goldney. That gentleman had in effect advised the Club to take up the question of rating. He begged to tell him that that question, like some others which he had mentioned, was fully discussed long ago (Hear, hear). They had been at it for years (laughter). They originated a committee of the House of Commons on the customs with regard to land. As to leases, he did not believe there was any form of covenant which had not been brought again and again before that Club. When the hon. gentleman and others like him told them what they ought to do, all he could do in the way of reply was to put the records of the past discussions in their hands and say to them, "Go thou and do likewise" (cheers).

The CHAIRMAN then proposed "The visitors."

Mr. GOLDNEY in responding remarked that if the matters to which he had alluded had, as Mr. Corbet said, been discussed, the Club seemed to have kept the discussions to itself (Cries of "No, no," and a voice, "They have been published in a monthly printed paper of the Club, and in all the agricultural journals"). At all events such topics ought to be made very prominent before the public. The hon. gentleman concluded by expressing the pleasure which he felt at becoming that evening a member of the Club.

The CHAIRMAN then gave "Our next merry meeting;" after which the company separated.

The dinner was, it may be remarked, an admirable one, and in all respects highly creditable to the manager of the Salisbury Hotel, Mr. W. H. Lewis. The occasion was, moreover, enlivened by some excellent and appropriate songs by Mr. Gray.

THE CANTERBURY HOP MARKET.—The whole of the prizes offered by the citizens for the greatest quantity and for the best quality of hops passed through the public scales have now been awarded. First prize of £25, for the greatest quantity, to Mr. Henry Cooper, Canterbury; second, £10, to Mr. S. D. Ewens, Hambledown. First prize of £10 to the grower and £4 to the dryer, for the best sample of hops, to Mr. S. Cladish, of Beau; second, £5, to the grower and £3 to the dryer, to Mr. Hope Theobald, Godmersham; third, £2, to the dryer, Mr. H. Coopen, Canterbury; fourth, £1, to the dryer, Mr. Charles Collard, Canterbury. Highly commended, the hops of Mr. Robert Berriman, of Langridge Manor Farm, Petersfield, Hants. Prizes offered by Mr. F. W. Collins, for hops grown on his patent, first prize, £20, for the greatest quantity brought to Canterbury fair, to Mr. F. Crowley, Alton, Hants; second, £10, to Mr. Hope Theobald, Godmersham, Kent. The prizes offered for the greatest growth per acre were not competed for. Judges: Messrs. West and Beeman, of the Borough.

THE SMITHFIELD CLUB CATTLE SHOW,

BY THE OLD NORFOLK FARMER.

The increasing popularity of the Smithfield Club Cattle Show is a highly-gratifying fact, both to the members of the Club and to the exhibitors; but the novelty of the Show has ceased with the design of the exhibitors to render it wonderful by the huge and unsightly accumulations of fat upon the poor beasts, "more beneficial to the lights than to the liver," as an abominable punster once observed. The public don't want large callops of fat to place upon their Christmas tables, but well-marbled sirloins and other joints of beef and mutton, young, tender, and of fine flavour. I am thus happy to be able to observe that, with few exceptions, the present Show is an improvement, in the way of feeding or over-feeding, upon some former years, and that more attention has been paid to the symmetry of the various types of animals exhibited than to the making of mountains of fat, which no stomach of less strength than that of an ostrich could digest or even retain.

There is an evil, however, arising from a large attendance at the Show, which to an old visitor like myself is a very grievous one: I refer to the difficulty of being able to get near the more interesting specimens, owing to the crowds by which they were constantly surrounded. It was only for an hour or so, at the first of the morning, that I could get near enough to touch the salient parts of the prize animals so as to judge of their quality. After this it was a chance indeed that enabled me to shoulder between the sturdy practitioners who warmed round the favourites. Glad, however, was I to see my old favourites "to the fore" again—the aristocratic Devons, who always appear, to my perhaps prejudiced eyes, the ladies and gentlemen of the *genus bos*. Nor less satisfactory was the show of Southdowns amongst the *ovines* (I must be a little classical on such an occasion); than which there are no more beautiful or profitable animals on the farm, or more delicious meat on the table. "Oh! you savoury walking giblet pies!" said a gourmand once, who had a *punchant* for that sort of food, upon seeing a flock of geese feeding on a green. I am sometimes tempted to apostrophize the Southdown sheep and the Devon cattle in the same epicurean strain; and I often think I can distinguish them as they hang up in the butcher's shops—but perhaps this is a mistake.

I am glad to see her Majesty come out this year so strong in the Devon line. I know that the late Prince Consort entertained a high opinion of the breed; and I am glad to find they are still favourites on the Flemish and other royal farms. It struck me that, although the show of Devons was not so large as usual, the quality, so far as I was able to examine them, was quite equal to those of any former show. Our noble Queen, heaven bless her! takes the lead, for the first time, in her own name, which of itself constitutes a favourable era in the history of the Club. The royal prize beast was a perfect beauty of symmetry, and her excellent points were not smothered with fat: but there was quite sufficient of that *addendum* to ensure a first-rate quality of meat. In the next Class the first and second prizes were doubtless properly awarded; but the judges must have possessed acute perceptions to make the awards and discriminate between the merits of the two types. I am glad to find that the Devon cattle are becoming increasingly favourite stock in my native county; and that since the Scottish graziers and breeders have got into the

habit of fattening their cattle at home, the Devons have, to a very large extent, taken their place, during the season, on the Castle Hill at Norwich, and at the cattle fairs of the county. When I lived on the Sharrington Hall Farm, the favourite cattle were the Galloway Scots, and, undoubtedly, although they did not fatten up to so great a weight as some other breeds—notably the Shorthorns—they would always fetch a shilling or eighteenpence a stone more than the large cattle in the market, either at home or at Smithfield. The gold-medal ox—the Aberdeen giant of Mr. McCombie—is an enlarged species of the Galloway; and a noble fellow he is; but I could not get near enough to touch his ribs, and I was obliged to content myself with taking him in front. Besides, I understand that so sick and sore was he, from being so unmercifully poked on the ribs by the hundred and fifty thousand visitors, that at last he received them "in bed," or, in other words, lay down as comfortably as circumstances would admit, and no compliments bestowed upon him would induce him to rise.

One feature of the show of cattle, so far as I was able to judge, was the greater amount of fine symmetry in the types exhibited, made manifest by moderate fattening, so that the *points* were well defined and capable of due appreciation by the judges. The Hereford cattle showed in force, and their high character was sustained. I always consider this class of cattle cousin-german to their neighbours—the Devons; and the Sussex, in my opinion, had the same origin; but this is a disputable point not in my power to substantiate, nor any other person's; but, at any rate, all three types were well represented at the show. The bird's-eye view of them, that I was able to take, led me to think there was a general excellence prevailing with but few exceptions, and that the fortunate purchasers of the best parts for their Christmas fare will find no fault with the quality. Most of the Herefords showed a deep square carcass, a supple skin, and a mellow but firm touch to the finger, which latter, as I have stated, was abundantly tested.

Of Shorthorns there were fifty-seven specimens exhibited, and, as "beef for the multitude," they made a respectable appearance. They are no favourites of mine, but invariably answer the purpose of the breeder and grazier. They consume a large portion of food and fatten in proportion, so that the return is quick and the sale ready at a price inferior to that of the better breeds. The Duke of Sutherland's two-year-old steer was a remarkable animal for his age, and so was the three-year-old of Mr. Foljambe. The first ought to be a good one, having for his ancestor "Royal Butterfly" 15th, whose acquaintance, however, I regret to say, I never made. There is one characteristic of the Shorthorns which every one must commend, and that is, their quiet demeanour, in which they show their Dutch origin. Whether in the open yard or the stall, they exhibit no pugnacious propensities, and decidedly are neither Ribbon nor Fenian cattle, which in these degenerate days is no small recommendation. Well, I don't like to pass them without one word of praise in addition. I therefore bear willing witness to the fact that the breeders and feeders of the Shorthorns have well fulfilled their task in the production of the specimens exhibited; and although my prejudiced mind prefers the more native types of the bovine race, the

Shorthorns are adapted to the days of "hannual Parliaments, universal sufferings, and wote by ballad," as our friends the Chartists have it.

As usual, my own county's cattle, the Norfolk breed, cuts a sorry figure—four specimens, of which three necessarily took prizes, whether they deserved them or not. How is this? I think I can tell you. Norfolk never was a cattle-breeding county, and such native (so called) cattle as they have are evidently descended from the Galloway Scots, mixed afterwards with the Suffolk polled breed. What male calves are produced are generally killed as veal, the females being brought up for the dairy, most of the cows being good milkers. In respect to symmetry they are much below the standard of excellence required for prize cattle; and as they answer the purpose well for the dairy, there is no inducement for the Norfolk farmers to make any improvement, being convinced that such improvement would lessen their value as milch cattle. But I must hasten on.

The Long-horned and Scotch-horned cattle also are not numerous, there being only fifteen specimens. Of the first there were six, one or two of which were very good; but the number altogether was barely sufficient to represent the breed. The Highlanders were better represented, and most of the nine exhibited were well-fattened and showed excellent points. The Duke of Sutherland's steer was a beautiful animal, square, deep, and compact in his frame,

with plenty of fat, but not too much on his ribs and rump. But, like the rest of his race, his horns were sharp, and I have no doubt that he would drive a whole herd of Shorthorns before him, as I have seen some of his sort drive the Galloways or Scotch Polled out of a yard. This is the only fault of the Highlanders—their pugnacious disposition, which renders it impossible with safety to keep them in a yard with other cattle.

The Scotch Polled, or Galloway and Aberdeen cattle—for I consider them the same—were only six in number. Of Mr. McCombie's I have already spoken. Mr. Longmore's also was an excellent animal, which took the second prize. Next to the Devons I prefer the Polled Scotch for grazing. They do not attain a large size in general, but they fatten readily, and make the best of beef, fetching the highest price in the market.

The Irish cattle—five in number—were scarcely worthy of notice. The Welsh—six—were much better, and Captain Platt, of a place with a name unspeakable to an Englishman, took the first prize for a handsome five-year-old, well-fed, of fine symmetry, and evenly covered with fat. But I must close with one remark—that all the exhibitors appear to have adopted the principle of moderate fattening, and have thus improved the character of the Christmas Cattle Show from the imputation of smothering symmetry by over-fattening.

THE POLITICS OF AGRICULTURE.

Following succession on the business of the Smithfield Show-week, there have been three or four important gatherings organized by certain of the local Chambers of Agriculture. There has been a dinner at Shrewsbury, a dinner at Wolverhampton, and a meeting in the West of England, all very numerously attended; though a similar call in Suffolk would not appear to have been very energetically answered; nor does the Hereford Chamber draw very large audiences. But with the majority, however, of these demonstrations, we can associate some "importance" advisedly enough. Landlords and tenants have alike by their presence given their support to these occasions, as they have done so, moreover, with the clear understanding that they would be expected to speak out. It may be stated in the outset that the country gentlemen by no means committed themselves in this way. The tone they pretty generally adopted was kind and encouraging; but, for the actual material of the meetings, we have to look to the tenantry, and to such acknowledged leaders of the movement as Mr. Sewell Read and Mr. Jasper More. Still, even here a somewhat guarded form of expression is very noticeable, and the home-truths came for the most part from the outsiders, or from men put up late in the day. But this, perhaps, is only natural. Desirable as it ever must be to bring owner and occupier together, any such conference is tolerably sure to be recognized by a peculiar tameness, as it were—no doubt, in some degree, inevitable; and if the new Chambers have anything more than another to fear, it is from being overlaid by great people.

Not but that a variety of seasonable topics were talked over. If these Chambers have a duty, it is to look to the importation of foreign stock, and the measures about to be introduced on the subject. But if the Central Chamber does its duty in this way, it is hard to understand why the Home-Cattle Defence Association need ever have been instituted, or one more call made upon the agriculturist? It is the last straw that breaks the back of the camel; and we say, seriously, that many are

already sickening of such repeated demands on their pockets. Then the Turnpike business, as also coming before Parliament, is very legitimately within the scope of these societies; not that it is by any means so engrossing a matter as some would seem to consider; and the adjustment of our weights and measures, in a lesser degree, manifestly requires attention. Further, the Malt-Tax is, at any rate, something to talk about. As Mr. Sewell Read said at Shrewsbury, by going on as we are, and obtaining more evidence, the duty may not be continued for more than two hundred months longer; although it must be confessed that, beyond Mr. Read and Mr. More, other honourable gentlemen still made as little mention of the Malt-Tax as possible. For the moment we have overlooked Mr. Tomline, at Ipswich, an M.P. who certainly seems to look at little else: "Of course our main object, as it was our first object, is to obtain the Repeal of the Malt-Tax." But, over and above this, Mr. Tomline does not go much with other members of the House of Commons who are also members of the Chamber of Agriculture. So far from seeing any good to come from another Committee, he says to his friends in Suffolk, "You all understand the position of the Malt-Tax, and don't require a Committee to give you a knowledge of that which I thought was in the possession of every man, although it appears there are some county members who seek to have it, but I believe it is with the secret understanding that it is not to report until the Chancellor of the Exchequer has brought forward two budgets." This is a somewhat grave charge, the more so as coming from a gentleman who last year, if we remember aright, was Chairman at a meeting of the Shropshire Chamber of Agriculture. What was said in Suffolk and said in Shropshire during the past week by the chiefs of the same corresponding society will read strangely at variance. However, there is no mistake about Mr. Tomline's own notion of the Chamber's duties, by which agency he hopes to "secure free trade in barley, in malt, and in silver." If the Chamber of Agriculture does de-

termine to take up the currency, there will certainly be something to do.

But are there no other questions which the political organ of the farmer should take up? If there are, they were only incidentally or very delicately touched on at Shrewsbury and Wolverhampton. Mr. Bather did strike out a little when he said, "There is the question of Tenure, which, if not now before the Legislature, in course of time will be, unless we deal with it in a suitable manner. Then there are questions which I am almost afraid to mention, and yet I do not see why I should not—questions relating to the Game-Laws. I say, gentlemen, if we don't take them up ourselves, other people will take them up for us." It is very plain that most people are afraid to mention questions relating to the game, although, if the Chamber of Agriculture proceeds with its work, this must come; and Lord Lichfield, at Wolverhampton, admitted that "the game caused more ill-feeling between landlord and tenant than any other matter;" but of course nothing was said of this in Suffolk. Again, almost the last speaker at Shrewsbury, and almost the only one who referred to Mr. Bather's suggestion as to Tenure, was Mr. Mathew Evans, who "hoped the question of an equitable Tenants' Right Bill would be considered. He thought that was far more important than the repeal of the Malt-Tax or any other tax." These remarks as to game and to Tenant Right, be it observed, were received with marked applause by the general body of the company, although such topics were carefully avoided by the leading speakers.

But by far the most curious and significant omission at the two companion festivals in Shropshire and Staffordshire was touching County Expenditure and the management of County Rates. Although there was plenty of conversation as to Boards for regulating the expenses of highways, no one seems to have given a thought to the more general cost of keeping a county in repair. This is the more extraordinary, as Mr. Jasper More was present at both these dinners; and in the autumn Mr. More made this the point of his address at a meeting of the Shropshire Chamber. Very possibly, however, the honourable gentleman may have been "schooled" in the interim for his new office; and County Expenditure, we will allow, is a delicate matter to discuss when the landlords and farmers of a county come together. But it will have to be discussed nevertheless, with so many other matters contingent on its adjustment. The Chamber of Agriculture in Cornwall, indeed, talked of nothing else; although the other Chambers in Council, just at the same time, talked of this scarcely at all. Assuming, however, that the Central Chamber hesitates to deal with so important a business, what will be the consequence? Mr. Bather's words will be carried out to the letter: "If we don't take it up ourselves, other people will take it up for us;" and Mr. Wyld, the Member for Bodmin, will introduce a Bill during the next Session, although the Chamber of Agriculture may never move in the matter!

FOREIGN AGRICULTURAL GOSSIP.

It appears that the imports of wheat and flour into France in the first ten months of this year amounted to 8,000,000 quintals, as compared with 2,000,000 quintals in the corresponding period of 1866. The exports of wheat and flour from France declined, on the contrary, in the first ten months of this year to 8,100,000 quintals, as compared with 6,300,000 quintals in the corresponding period of 1866. Thus the imports increased in the first ten months of this year to the extent of 6,000,000 quintals, as compared with the corresponding period of 1866; the exports, on the other hand, decreased to the extent of 2,100,000 quintals. Combining these two differences together, we arrive at a total of 8,100,000 quintals as the extent of the deficit occasioned in the French home wheat supplies by the indifferent wheat harvest of last autumn, that is to the extent of the deficit to Nov. 1.—For two years past landed property in Upper and Lower Bavaria has been under the influence of a crisis which appears to affect equally town and country, and the intensity of which must be truly shocking if it be true, as a journal recently affirmed, that out of 10,000 houses in the city of Munich 3,500 had been sold by judicial authority during the two last years. The figures given are stated to be exaggerated; but even if we reduce them to 1,500, according to the most moderate estimates, the situation will scarcely appear less sad, and the picture will become even more sombre still when we add that in the rural districts the evil is greater and more profound. Thus out of 126 rural premises the expropriation of which was insisted on by the Munich Mortgage Bank in repayment of loans made on mortgage—the loan never exceeding, it should be added, half the value of the property—60 only could be sold, although the greatest facilities as regards payment were offered and guaranteed to purchasers. The Frankfort Mortgage Bank was scarcely more fortunate in the operations of the same

kind to which it had recourse, in consequence of loans which it had agreed to make in Bavaria. A fact calculated to produce the most serious uneasiness, but which is said to occur rather frequently now-a-days, is the abandonment of farms by their proprietors, who, having come to an end of their resources, after having exhausted the soil and worn out their plant, wind up by carrying off from their habitations every thing which can be removed, even doors and windows. They disappear, in a word, with their families, abandoning to their creditors a completely ruined mortgage, which the latter are still obliged to administer. Doubt and negation in the matter are rendered impossible or nearly so, from the fact that the public journals are constantly inserting warnings given to proprietors whose residences are unknown, and who are thus officially warned that the sale of the property nominally theirs will be proceeded with by the authority of justice. Finally, as a closing illustration of the troubles and distress prevailing, we may note that forced sales of premises for unpaid taxes, hitherto nearly unknown in Bavaria, have become, if not frequent, at any rate rather common. From all this it is clear that there is a great depreciation of landed property—so great, indeed, that the Bank of Munich has not been able to find a purchaser at an upset price of £2,000, of which only £500 is required to be paid immediately, for a flour mill surrounded with a rather important quantity of land, and provided with a dwelling-house and farm-buildings, the whole being estimated in March, 1864, to be worth £5,686. The same phenomenon has been observed in Franconia, where a brewery, with tools and a small quantity of land, valued in January, 1865, at £4,000, was offered for sale at £1,800, of which only half was to be payable immediately, while no purchaser presented himself. As regards the causes of the evil and the means of remedying it, opinions are necessarily

very divided, and the first phases of the debate which has taken place on the subject have brought about more or less bitter recriminations; those who throw the blame on cultivators censuring them for their want of intelligence, while the agricultural press complains of the want of patriotism shown by capitalists and their marked preference for foreign securities. Others, again, persist in seeing in the crisis only a temporary stagnation in affairs, which will cease with the rise in the price of food-products now in course of realization. Interrogated recently on the subject in the Chamber of Deputies, the Minister of Commerce stated that, in his opinion, the crisis which affected property in Lower Bavaria arose principally from the rise in the price of land since 1849; the diminution in the net revenue derived from land, in consequence of the smallness of the returns obtained and the reduction in the prices realized; the advance which has taken place in the rate of interest, in consequence of the more active demand of which capital has been the object; and finally, as the general result of all the cases just enumerated, the depreciation of landed securities. As regards the means to be employed to relieve the situation, the Minister indicated no others than the putting within the reach of persons interested the capital which they may require, confining at the same time the rôle of the State to the removal of the obstacles which may present themselves to the normal diffusion of capital, especially by the creation of establishments which undertake the task of effecting this diffusion in a regular manner. The same conclusion is arrived at by the author of a work published under the title of "The Depreciation of Rural Property in the Provinces of Old Bavaria." After having indicated the rapid and perhaps exaggerated rise in the value of the soil in 1848, soon after the abolition of certain remains of the feudal system, the author shows that mortgage charges and debts have increased, while the rents derived from landed property have been following an opposite course. He deplores the absence of special instruction and of sound economic

ideas among cultivators, and he sees no remedy for the evil except in an elevation of the standard of morality and intelligence, and in a fall in rural property, the price of which is no longer *en rapport* with the quotations of the funds. Some of this writer's conclusions are considered to be open to discussion and criticism; but when, putting on one side an examination into the causes of the crisis, he seeks to concentrate his attention on the means best adapted to relieve agriculture from its embarrassments, he can find no others apparently than a vague suggestion for the re-establishment of credit, the shaking of which has not followed, but rather engendered the evil. When we come to examine the state of affairs, we find that, not only in Bavaria, but in all Germany, credit is confined within the most narrow limits. Some great proprietor of Mecklenburg or Holstein, who formerly enjoyed an unlimited credit among Hamburg capitalists, and who ten years since paid only 8½ per cent. for his loans, is often now obliged to pay 5 per cent., and to subscribe besides, when the period of their renewal arrives, to very onerous conditions. In Prussia, we are informed by Herr Becker, the author of a remarkable work on the reform of mortgages, landed property was last year placed in circumstances of great embarrassment for weeks together for relatively inconsiderable sums which had to be paid in cash. The difficulties of the situation extend, then, beyond the limits of Bavaria, although nowhere are they more strongly apparent than they are there. Not only are no new mortgage investments made, but old ones are restricted. Time was when, to use an expression borrowed from the language of the turf, the landed proprietor was "the favourite" of the money market, and had literally to select between offers of service on the part of capitalists great and small; now the current has set in another direction, and it is only guardians who do not avoid placing out on mortgage the property of their wards, and who do not throw their capital, with the great majority of investors, into State funds.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BOSTON SHEEP MARKET.—Only a small show of sheep; but trade was somewhat better than last week, and prices ranged from 6d. to 8½d. per lb. for the best sorts.

DERBY FAIR.—A large collection of fat stock of all kinds. A considerable number of beasts remained unsold. Of sheep there was a very good show, but the sale for them was anything but brisk; and the same may be said of the demand for calves and pigs, the numbers of which were more restricted. Beef 7d. to 8d., mutton 6d. to 7d., veal 7½d. to 8d., pork 5½d. to 6d. per lb.

DONCASTER FORTNIGHTLY MARKET was very largely supplied with both beasts and sheep. Some splendid beef was exhibited, and many prime animals were bought by local butchers; nevertheless, there was not so lively a trade as one would have supposed from the class of stock shown. Prices were pretty much the same as when last quoted; beef 7s. to 8s. 3d., and in some cases 8s. 6d. per stone; mutton was a slow sale, at from 5d. to 6½d. per lb.

KNARESBORO' FORTNIGHTLY MARKET.—There was not a large show of stock. Beef 7s. 6d. to 8s. per stone, mutton 6d. to 7d. per lb.

LAURENCEKIRK FORTNIGHTLY MARKET.—There was a good attendance and a pretty fair turn-out of fat cattle, and also a few milch cows and store storks, the latter being mostly from Ireland. Prices for all kinds of stock were a good deal back; indeed, judging from appearance, we should think prime fat was not more than 9s. to 9s. 6d. per imperial stone. A number of half-fed beasts were sold at prices varying from £12 to £16 per head.

NEWARK FAT STOCK MARKET.—This was the smallest market we have had for a length of time; and buyers being very scarce, but a small amount of business was done, and prices were a trifle lower. Beef 7s. 6d. to 8s. per stone, sheep 5½d. to 6½d. per lb.

SHIPSTON-ON-STOUE FAIR.—There was a good supply of beef and mutton, and plenty of buyers. Mr. James Garrett, of Brailles, exhibited some very prime oxen, which sold at high prices; and Mr. Thomas Garrett, of Compton Scorpion, exhibited some fine Down sheep, which sold well. Mutton fetched from 5d. to 7d., and beef 6½d. to 7½d. per lb.

SPILSBY STOCK MARKET.—The supply was only small, and those not of the best quality. Trade was dull, and except for heifers and calves, which were very dear, prices had a downward tendency. Drapes and young store beasts were somewhat lower.

WARWICK FAIR.—There was a very large number of cows in good average condition. There was not, however, a good supply of beef of the prime quality, but a large amount of business was transacted at 6½d. to 7d. per lb. There were a large number of sheep disposed of at rates varying from 6½d. to 7d. per lb.

YORK FAIR has been one of the flattest which has been known for some years. There were few buyers of hunters, whilst coaching horses were soon bought up. Horses of the middle class, suitable for artillery purposes, were purchased by agents for our own Government; and there was a marked absence of foreign buyers, or of commissions for military horses for the Continent. Well-framed

powerful dray horses found customers, as also did well-limbed active young horses for London work. There was very few ponies, and none of well-matched pairs. Teams for agricultural work were also in demand; and of ordinary two-year-old cart horses there was an abundance at £12 to £15 each. The following may be quoted as the ruling prices of the fair: Hunters, high-bred young horses, broken for the hunting-field, £70 to £120, ditto, seasoned and fast, £100 to £200; ditto, up to heavy weights and of celebraty, £150 to £300; carriage horses, well-bred, upstanding young animals, £50 to £100; do., selection of match colts of good fashion, greys or bays none shown; ditto, active light-stepping horses, adapted for Broughams and light carriage work, £50 to £70; ditto, useful fast-going animals for single harness, £40 to £60; well-bred park horses, £50 to £100; neat-going compact-built cobs, £20 to £40; well-limbed, active, young cart horses, suitable for London work £30 to £45; useful seasoned horses for agricultural purposes and machine work, or as artillery horses, £18 to £30.

IRISH FAIRS.—ARDEE: There was a marked fall in the price of beef, the best quality of which was quoted at 56s. to 60s., while second-class ranged from 50s. to 53s., and inferior beasts from 37s. 6d. to 45s. per cwt. Three-year-old bullocks £12 10s. to £15 each, two-year-olds from £8 10s. to £11 10s. per head. Two-year-old store heifers from £9 to £12 for anything in fair condition. Yearlings (off) from £5 to £8 a-piece. Mutton was not quite in so good demand as beef and fair prices were obtained. Best widders fetched from 6d. to 6½d., and ewe mutton from 5d. to 5½d. for good quality. Aged mutton, 4½d. to 5d. per lb. In the swine fair considerable business was done for the export trade, good bacon commanding 48s. to 50s. per cwt. Store pigs from 40s. to 50s. each, and bonhams from 8s. 6d. to 15s. each.—**NAAS:** Strippers £7 to £9 a head, stores sold at from £12 to £14 each, two-year-old heifers from £8 to £10 each, one-year-old from £5 to £7, milch cows sold at from £15 to £18 a piece; fat sheep of good quality sold at from 5d. to 6d. per lb., and inferior at from 4½d. to 5d., yet the butchers maintain a most unprecedented price, namely, 7d. to 8d. per lb., bacon, good stores brought from 25s. to 37s. a piece, bonhams 19s. to 15s. each.—**KEADY:** Springers brought from £12 to £18 for young cattle, for aged cows the prices ranged from £7 to £9 milch cows brought £8 10s. to £13, strippers £7 10s. to £10. A limited supply of beef, price per head £12 to £19. Fat sheep sold for 36s. to 50s. each.—**RATHEALE:** Cattle was at an advance of from £1 to £3 a head. Butchers' beef was fully up to 60s. per cwt., and mutton 6d. per lb. sink; two-year-old heifers rated at from £8 to £10, three-year-olds £10 to £13, yearling £3 15s. to £4 10s, dry cows £12 to £13, heavy beasts in prime condition £16 to £19 each. Widders fetched 4½d. to 47s. There was an enormous number of pigs, and nearly all sold off; highest price for bacon 46s. per cwt.—**BALLYHAIR:** Weaning calves £1 10s. to £3 10s. a piece; year-and-half-old do. (stirks) £3 10s. to £5 10s.; two-year-old heifers and bullocks (or stores) £6 10s. to £9 10s., milch cows and springers near the dropping £7 10s. to £14 15s.; pigs 40s. to 45s. per cwt.—**NEWTOWNBARRY:** Beef 50s. to 58s. per cwt.; milch cows, springers, and three-year-old cattle £10 to £17 each, in each class; two-year-old £6 to £10; yearlings £3 10s. to £5 10s.; mutton 4½d. to 6d. per lb.; wethers 39s. to 45s., ewes 30s. to 38s. each; bacon pigs 40s. to 47s. per cwt., stores (advanced class) 40s. to 50s. each, inferior 35s. to 40s., slips 15s. to 27s. each, bonhams 7s. 6d. to 13s. each.—**BORRISOKANE:** Lambs 15s. to 22s., and sheep 22s. 6d. to 40s.; good cattle £12 10s. to £16 10s. each, and dry and stripper cows £9 to £11 each; yearlings about £3 10s. to £7 7s.; two-year-olds about £6 6s. to £10; milkers and springers of good quality were much looked for, and brought £11 to £15 15s. each; good beef may be set down at 50s. to 60s. per cwt., inferior a few shillings less. Fat pigs were disposed of at two guineas per cwt., and bonhams were sold at from 15s. to 28s. per pair.—**DUNDALK:** Finished beef brought more than 58s. to 60s. per cwt.; second quality 50s. to 55s. The supply of pigs was exceedingly large; bacon 43s. to 44s. 2d. per cwt.; good stores 40s. to 45s. each. **CALAN:** Fat sheep were briskly bought up at from 4d. to 5d. per lb.; first-class lambs could not be had under 26s., whilst the best hoggets sold freely at from 30s. to 34s. Springing cows, likely to drop in March, mustered strongly; new milch cows scarce, and in excellent request, the former sold generally at from £8 10s. to £11 15s., the latter £10 10s.

to £14 10s. Advanced store cattle were speedily swept away at figures ranging from £10 to £13; yearling and two-year-olds numerous, and demand slack, except for top ones, which rated at from £6 to £10, inferiors £4 to £6 15s., and calves £2 10s. to £3 5s. Only a limited number of bees, which were purchased at about 56s. per cwt. for prime, down to 48s. per cwt. for inferior.—**KILNALECK:** Pork ranged from 38s. to 40s. on the foot, sinking off. Weaning calves sold at £1 10s. to £4 10s. each, springers (near calving) sold from £8 to £12, two-year-old heifers sold at from £10 to £12 10s. each. **MOATE:** Three year old heifers ranged from £13 to £14, two year olds from £12 to £13 10s., yearlings from £4 to £5 10s., three year old wethers from 35s. to 42s., lambs from 18s. to 22s. 6d. Pigs sold at 40s. to 42s. per cwt. The horses exhibited were of the most inferior description, and scarcely realized from £8 to £10 each.—**CAMLOUGH:** Beef sold at from 50s. to 60s. per cwt., springers from £10 to £14 each, strippers from £8 to £10 each. The horse fair was fairly supplied with cattle, which were chiefly of the farming class. The prices varied from £25 down. On the whole, however, a tolerable business was transacted.—**CASTLEDERMOT:** Springers and milch cows brought from £14 to £18, and some even £21 each. Good wether mutton sold at 6d., and second-class 5d. to 5½d. per lb.; lambs from 2s. to 28s., four-year-old heifers and bullocks fetched from £14 to £16, three-year-old £12 to £14, two-year-olds £9 to £11, and yearlings from £6 to £8; pork sold at 42s. forward stores 50s. to 55s., smaller ones and bonhams from 10s. to 15s. each.—**COOTHILL:** For porkers 42s. 6d. to 44s. per cwt., slips 32s. to 42s. each, bonhams average 25s. per pair. Fat Beasts, fit for knife £2 5s. and down, mediums 40s. and down; lambs average 27s. 6d., mutton 6½d. to 7½d. per lb. Cattle, brisker buying; good fat beasts realised a slight advance, young stirks and bullocks £2 10s. to £2 17s. 6d., yearlings £4 10s. to £5 5s., two-year-olds £6 10s. to £9, beef 6d. to 8d. per lb.

POTATO MARKETS. SOUTHWARK WATERSIDE.

LONDON, MONDAY, DEC. 23.—During the past week the arrivals, both coastwise and from abroad, have been more liberal. Trade good for best samples; inferior lots a slow sale. The following are this day's quotations:—

Yorkshire Flukes.....	130s. to 160s. per ton
Ditto Regen ts.....	130s. to 150s. "
Ditto Rocks.....	110s. to 120s. "
Kent and Essex Regents.....	140s. to 160s. "
Lincolnshire Regents.....	120s. to 140s. "
Dunbar and East Lothian Regents...	130s. to 150s. "
Perth, Forfar, and Fife Regents.....	110s. to 140s. "
Ditto Rocks.....	100s. to 110s. "
French and Belgian whites.....	80s. to 90s. "

ALEX. TOD.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, DEC. 23.—The supplies of potatoes on sale at these markets are less extensive. The demand has improved, and prices have an upward tendency. The import into London last week consisted of 1,604 sacks from Dunkirk, 585 bags Harlingen, 32 casks Hamburg, 181 tons Honfleur, 344 sacks Boulogne, 60 tons 2 sacks Caen; 47 packages Rotterdam, and 120 tons from Groningen.

Regents.....	120s. to 180s. per ton
Flukes.....	130s. to 180s. "
Rocks.....	100s. to 130s. "
French.....	80s. to 90s. "

COUNTRY POTATO MARKETS.—**BAENSLEY**, (Saturday last): Rocks 12s. to 12s. 6d., Regents 14s. to 14s. 6d., and flukes 14s. 6d. to 15s. per load.—**DONCASTER**, (Saturday last): A moderate supply at about last week's quotations; Regents 13s. to 14s. per load.—**HOWDEN**, (Saturday last): Potatoes 1d. to 1s. per stone.—**PONTEFRAC**, (Saturday last): Potatoes 1s. 5d. per weigh.—**YORK**, (Saturday last).—The supplies of Potatoes were on the most limited scale, owing to the unfavourable weather; the price per tub of 280lbs. was 15s., and 1s. 1d. per peck retail.

LEEDS FAT STOCK SHOW.

The weather was by no means favourable, and the attendance was not so large as could have been desired. The show of fat stock furnished a good lot of animals to compete for the liberal prizes set forth in the list of the Leeds Smithfield Club. The judges may have had difficulties to contend with in other classes, but they had none in awarding to Mr. McCombie's best the white rosette of the Mayor's cup, valued at £30, as the finest beast in the show-ground. Mr. G. Taylor's shorthorn, which stood first in its class at Birmingham, and there overthrew the shorthorn which has subsequently been placed before all others of the breed in London, had in its turn to succumb at Leeds, where it only came in second, the first place being given to a fine beast belonging to Mr. J. W. Pease, M.P., Darlington. The Innkeepers' Cup, value £10, for the best heifer, fell to Sir W. C. Trevelyan Bart.; and two other cups—the Tradesmen's for the best cross-bred bullock, and that given by the Leeds Butchers' Association for the best beast in the Tenant Farmers' Class—went to Scotland, being gained by the well-known Mr. Richard B. Harris, of Forres. Only one prominent honour was retained in the locality, and this was in connection with one of the most important classes of stock, viz., that of fat cows. Mr. James Hindell, Parkside, Beeston, was the winner of the cup given by the chairman of the club, Mr. Joseph Wright, for the best animal of that description. There was not a large show of sheep; Mr. Byron, of Sleaford, was the successful exhibitor for the club's silver cup. Pigs excelled as well in bulk as in numbers; they have never been so numerous, and they have never been so fat. The Merchants' Cup was gained by Mr. E. A. Rhodes, Snaith, and the Club Cup by Mr. James Robinson, Hayley-hill, Halifax.

The following gentlemen officiated as judges: Cattle and sheep.—Mr. B. Hammond, Bradford; Mr. R. Taylor, Pannall; Mr. T. Laycock, Leeds. Pigs.—Mr. G. Mangies, Givendale; Mr. Wm. Parkin, Spofforth. Roots.—Mr. A. Taylor, Temple-Newsam, Leeds.

Their awards were as follow:

SHORTHORNS.

Ox, of any age, Mr. S. Wiley, Bransby; second, Rev. T. Stanforth, Storrs, Windermere.

Ox, not exceeding three years old, Mr. J. W. Pease, M.P., Darlington; second, Mr. G. Taylor, Bridlington Quay.

Cow, Mr. W. B. Wainman, Harrogate; second, His Grace the Duke of Devonshire, Holkar Hall.

Heifer, not exceeding four years, Sir W. C. Trevelyan Bart., Wallington (and innkeepers' cup); second, Mr. J. W. Pease, M.P., Darlington.

OTHER BREEDS.

Cross-bred or Irish ox, Mr. R. H. Harris, Earn Hill, Forres, N.B. (and tradesmen's cup); second, Mr. J. W. Pease, M.P., Darlington.

Polled Scotch ox, Mr. W. McCombie, Aberdeen (Mayor's cup); second, Mr. T. Knowles, Aberdeen (and the Royal Agricultural Society's cup).

Polled Scotch cow or heifer, Mr. James Reid, Aberdeen; second, ditto.

Highland cow or heifer, Sir W. C. Trevelyan, Bart.; second, Captain Gunter, Wetherby.

Shorthorn ox, Mr. S. Wiley, Bransby.

Shorthorn cow or heifer, Mr. T. Willis, Bedale; second, Mr. R. Thornton, jun., Darlington.

Cross-bred ox, Mr. R. H. Harris, Earnhill, Forres, N.B. (Leeds butchers' cup); second, Mr. W. McCombie, Aberdeen.

Fat cow, in milk, Mr. J. Hindell, Beeston (chairman's cup); second, Mr. E. Wilson, Osmothorpe.

SHEEP.

Leicester or Long Wool Sheep.

Pen of three wethers or gimmers, under two years old, Mr. J. Byron, Sleaford (Club cup); second, Mr. J. Thompson, Bramham.

Pen of three south or other down wethers, of any age, the Right Hon. Lord Wenlock; second, ditto.

Pen of three horned Scotch, lonk, or mountain wethers, of any age, Captain Gunter, Wetherby; second, ditto.

PIGS.

Fat pig, large breed, of any age, Mr. J. Lakeland, Retford; second, ditto.

Fat pig, hog, or gilt, middle breed, exceeding 14 months old, Mr. E. Rhodes, Snaith (Merchants' cup); second, Sir J. W. Ramsden, Byram Hall.

Fat pig, hog or gilt, middle breed, under 14 months old, Mrs. Ellen Jackson, Leeds; second, Mr. Wm. Keyworth, Headingley.

Fat sow, middle breed, Messrs. J. and W. Sagar, Bradford; second, Mr. R. E. Duckering, Kirtton Lindsey.

Fat pig, hog or gilt, small breed, exceeding 14 months old, Mr. J. Dyson, Leeds; second, Mr. W. Keyworth.

Fat pig, hog or gilt, small breed, under 14 months old, Mr. Joseph Brumfit, Leeds; second, Mr. S. S. Jackson, Halifax.

Fat sow, small breed, Mr. J. Robinson, Halifax; second, Mr. R. E. Duckering.

Pen of three pork pigs, under 20 weeks old, Mr. Alfred Westerman, Headingley; second, ditto.

EXTRA PRIZES.

A silver medal was awarded to Mr. G. Thompson, Potternewton; Mr. R. E. Duckering, Kirtton Lindsey; Mr. Henry Rider, Hunslet; Mr. George Wilson, Leeds; and Mr. John Fagan, Leeds.

ROOTS.

Mangold wurtzel, Mr. G. Nussey, jun., Lincolnshire.

Swede turnips, Mr. J. Sucksmith, Hipperholme; second, Mr. J. P. Onthwaite, Knarsbro'. Common turnips, Mr. W. Ripley, York; second, Mr. J. Sucksmith, Hipperholme. Mr. T. Backhouse, Roundhay, a silver medal for Kohl Rabi, a new species of cattle food.

Potatoes, Mr. G. Nussey, jun., Lincolnshire.

RUGBY CATTLE AND ROOT SHOW.

PRIZES.

For the best fat steer, first prize, ten pounds, to Mr. J. Lawrence, Corbridge; second, six pounds, Mr. Edmunds, Rugby.

Five pounds for the best fat cow that has had a calf in 1866.—Mr. J. A. Beale.

Five pounds for the best bull, of pure breed, above a year old.—Mr. William Cowley, of Aahby St. Leger.

Five pounds for the best pure shorthorned bull, above one and under three years old, the property of a tenant-farmer.—Mr. S. C. Pilgrim, Burbridge.

Five pounds for the best cow in milk at the time of the show.—Mr. W. Senhouse.

Six pounds for the best pure breeding-cow, which has had a calf in 1867.—Mr. W. Senhouse. Second, four pounds, Mr. W. Senhouse.

Five pounds for the best heifer in milk, under four years old.—Mr. W. Senhouse.

Five pounds for the best heifer, in calf or in milk, under three years old.—Mr. W. Senhouse.

Five pounds for the best yearling heifer.—Rev. J. P. Constable.

Five pounds for the best pair of yearling steers.—Mr. John Crofts.

HORSES.

Ten pounds for the best mare or gelding for hunting purposes under six years old.—Mr. W. R. Line.

Five pounds for the best cart-mare in foal or with a foal at her foot.—Mr. W. Moxon.

Two pounds for the best cart-colt, or filly, under two years old.—J. M. Norman.

SHEEP AND LAMBS.

Five pounds for the best three Shropshire breeding theaves.—Mr. S. Pilgrim.

Three pounds for the best three cross-bred shearlings; and one pound for the three next best.—Mr. W. S. Townsend.

Three pounds for the best three breeding-ewes.—Mr. Joseph Goodman.

Two pounds for the best three theaves.—Mr. J. Berry.

Two pounds ten shillings for the best three wether-lambs, bred by the exhibitor.—Mr. Cowley, of Watford.

Two pounds ten shillings for the best three ewe-lambs, bred by the exhibitor.—Mr. W. Crowley.

PIGS.

Three pounds for the best sow or yelt of large breed.—Mr. Edmunds.

Two guineas for the best three breeding pigs under six months olds.—Mr. Edmunds.

Three pounds for the best boar pig of any breed, in working order.—Mr. Edmunds.

EXTRA STOCK.

Five pounds, by the Society, for the best beast, as extra stock, which has been the property of the exhibitor six months preceding the show.—M. J. A. Beale.

FOR THE BEST CULTIVATED FARM.

Ten pounds and the sweepstakes of ten shillings each for the best cultivated farm (being all he occupies) of not less than 100 acres.—Mr. Joseph Berry, Holbrook Farm, Newbold-on-Avon.

Four pounds for the cleanest and best crop of Swedish turnips, of not less than four acres in one piece, and the sweepstakes of five shillings each.—Mr. H. Brierley, jun., Church Lawford.

Two pounds for the best crop of white turnips, of not less than four acres in one piece, and the sweepstakes of five shillings each.—Mr. Joseph Berry; second, one pound, Mr. H. Brierley, jun.

Four pounds for the best crop of mangold-wurtzel, of not less than two acres, and the sweepstakes of five shillings each.—Mr. Edwards, Rugby.

One pound fifteen shillings for the best crop of carrots, of not less than half an acre, and the sweepstakes of five shillings each.—Mr. Joseph Berry.

Five pounds for the cleanest and best general crop of roots, including cabbage, of not less than eight acres, and the sweepstakes of five shillings each.—Mr. H. Brierley, jun.

One pound for the best crop of cabbage, of not less than an acre, and the sweepstakes of five shillings each.—Mr. J. Berry.

BOTLEY AND SOUTH HANTS OLUB.

The following are the prizes awarded by the judges: Messrs. Holdaway, Knight (of Droxford), Reeves, and Withers.

A prize of £5, given by Mr. Thomas Chamberlayne, of Cranbury Park, for the best ten acres of swedes, raised by means of artificial manures only.—Mr. Wyatt, 26 tons 15 cwt. 2 qrs. 24lbs. per acre. A prize of £3, given by Mr. G. Hunt, for the second-best ditto, Mr. Jeffery, 24 tons 1 cwt. 1 qr. 20lbs.

A prize of £5, given by Mr. Stuart Macnaghten, of Bitterne Manor House, for the best six acres of drilled swedes.—Mr. C. H. Gater, 24 tons 18 cwt. 2 qrs. 8lbs. For the second prize of 30s. there was a tie, and the sum divided between Mr. Roaling, 24 tons 1 cwt. 1 qr. 20lbs., and Mr. J. Withers, same weight.

A prize of £3, given by Messrs. Dixon and Cardus, for the best six acres of common turnips.—Mr. Mears, 22 tons 5 cwt. 2 qrs. 24lbs.

A prize of £2, given by Mr. Toogood, seed merchant, for the best four acres of turnips, raised by means of artificial manures only, and grown as a second crop after peas, vetches, rye, &c., and sown after July 7th.—Mr. Holdaway, 20 tons 2 qrs. 18lbs.

A prize of £3, given by Messrs. Spooner and Bailey, for the best five acres of mangel wurzel. A mixed crop of mangels and carrots, or other roots, was eligible to show for this prize, and the total weight reckoned.—Mr. Drewitt, 33 tons 8 cwt. 2 qrs. 8lbs.

A prize of £2, given by Mr. W. Warner, for the best two acres of mangel wurzel.—Capt. Robinson, 21 tons, 11 cwt. 1 qr. 20lbs.

A prize of £2, given by Mr. Caleb Gater, for the best three acres of mangel wurzel, or swedes, sown after June 10th, as a second crop after grass, rye, trifolium, tares, &c.—Mr. Roaling, 23 tons 11 cwt. 1 qr. 20lbs.

A prize of £3, for the best five acres of hybrid turnips.—Mr. Withers, 17 tons 2 cwt.

A prize of £2, given by Mr. G. Scott, for the best two acres of cabbages.—Capt. Robinson, 22 tons 10 cwt.

PRIZES FOR SIX ROOTS.

Six heaviest swedes, 79lbs., Mr. Drewitt, 5s. second ditto, 73lbs., Mr. Hewitt.

Six best shaped ditto, and 2s. 6d. second best, prizes divided between Mr. Drewitt and Mr. Withers.

Six best shaped green or bronzed ditto, Mr. W. Warner.

Six best shaped white ditto, Mr. W. Warner.

Six heaviest turnips, 93lbs., Mr. Franklin.

Best shaped green, white, red round, or globe ditto, Mr. Withers.

Best shaped tankard turnips, Mr. Drewitt.

Best shaped hybrid turnips, Mr. C. Gater.

Six heaviest mangel wurzel, 99lbs., Mr. Drewitt.

Six best shaped long red ditto, Mr. Drewitt.

Ditto orange globe ditto, Mr. Drewitt.

Ditto long yellow ditto, Mr. W. Warner.

Four heaviest cabbages, 119lbs., Captain Robinson.

Four heaviest kohlrabi, Mr. Drewitt.

Best collection of gourds, Mr. Drewitt.

Six heaviest gourds, 300lbs., Mr. Drewitt.

THE GUERNSEY ROYAL AGRICULTURAL SOCIETY.—On the 13th Dec. this society held their annual exhibition, which is reported to have exceeded the last held, not only in extent, but in the quantity of the produce exhibited. The weighing of the root-crops has given the following results:

Messrs.	Lbs. per perch.	per Eng. acre.	Tons. cwt.
John Carré, 1st prize	189	9	7
Nicholas Torode, 2nd prize	173	8	12
PARSNIPS.			
Thomas Carré, 1st prize	494	23	17
Henry De Jersey, 1st prize	455	22	0
John De Garis, jun., 2nd prize	455	22	0
CARROTS.			
Charles Le Page, 1st prize	879	42	9
John De Garis, jun., 2nd prize	819	39	12
MANGOLDS.			
Thomas Carré, 1st prize	1181	57	0
John Carré, 2nd prize	1078	52	1
MANGOLDS AFTER ANOTHER CROP.			
H. De J. Le Lacheur, 1st prize	700	33	16
Bonamy Martel, 2nd prize	625	30	3
SWEDS AFTER ANOTHER CROP.			
Thomas Carré, 1st prize	536	26	0
J. A. Le Messurier, 2nd prize	531	25	13
TURNIPS AFTER VETCHES OR CLOVER.			
Thomas Carré, 1st prize	717	34	12
Hilary Quartier, 2nd prize	704	34	0

SALE OF LORD DARTMOUTH'S SHORTHORNS.—This small herd of cattle was sold by auction at Patchall, on last month, by Mr. Stratford. Although it had been in existence only seven years, there were several animals of favourite blood. Lot 4, "Jessica," a fine cow of the J tribe, was bought by Mr. Beasley for 96 guineas; her two heifers, "Dog-rose" and "Desdemona," made respectively 48 guineas (Rev. C. W. Holbech), and 30 guineas (Mr. Finley Dun), the Marquis of Anglesey taking her bull-calf at 30 guineas. The three heifers of the Knightley blood were purchased by Mr. F. Leney, of Waterbury, at 50 guineas each, and "Charlotte Corday," 40 guineas (Mr. Burgess); "Draggle" (Mr. Woodward), and "Duke Fred," 41 guineas (Lord Forester), were the other principal lots. The 17 cows and heifers averaged £40 9s.; the seven bulls made but £32 5s. each.

CHEESE FACTORY AT SWINDON.—The dairymen in the neighbourhood of Swindon are about to try the factory system of cheese-making. A meeting of gentlemen interested in the matter was held to select a site suitable for the requisite buildings, and, after surveying several plots of ground, it was agreed to recommend a site belonging to the Charterhouse.

IMPORTANT TRADE-MARK CASE IN CHANCERY.

(Before Vice-Chancellor Spragg.)

DAVIS v. KENNEDY.—The plaintiffs in this case are the well-known firm of Perry Davis and Son, of Providence, R.I., United States of America, and of 17, Southampton-row, Holborn, London, W.C.; and the action was brought at the May, 1867, term of the Court of Chancery, in Hamilton, Canada West, to restrain the defendant, a resident of Hamilton, from the use of their trade mark—"Pain Killer." The hearing occupied the Court two days; and the Vice-Chancellor, after withholding his decision till September 3rd, 1867, then gave it in favour of the plaintiffs, granting a perpetual injunction against the defendant, and ordering him to pay to the plaintiffs all the profits he had made by the use of their trade-mark, and all the costs of the suit, &c. The following extracts from the judgment will sufficiently explain the case, and show the justice of the learned Vice-Chancellor's decision: "The defendant contends that what the plaintiffs call a trade-mark is not properly a trade-mark, but a term of description of the article which he prepares. I do not agree in this. It is a quaint combination of words never probably used together before, forming a name by which the inventor desired his preparation should be made known, and calculated, as he rightly judged, from its quaintness to fix itself in the memory of the general public. I come now to the principal question in the case—namely, whether the defendant has infringed the plaintiffs' trade-mark. He has been for several years the manufacturer and vendor of a preparation to which he ascribes many of the virtues which are claimed for the plaintiffs, and to which he has given the designation "Pain Killer." If he had used the designation alone, it would be a flagrant infringement of the plaintiffs' right. But it is contended that the words are so used as not to mislead purchasers. The defendant's article is spoken of by druggists in Hamilton as first known in the trade within the last five years. The defendant says he made it and advertised it in a local paper (in Dundas) some years before. It is evident that it was obscurely known until the later date; but even at the earlier date the plaintiffs' article had obtained a great reputation and a very large sale under the name of 'Pain Killer,' sometimes with and sometimes without the prefix of the name of the maker. Differences are pointed out between the appearances of the bottles and the labels in which respectively the article of the plaintiffs and that of the defendant are sold. To the eye there is an obvious difference when the two are seen together, and they are not called by the same name; the plaintiffs' article being called 'Perry Davis's Vegetable Pain Killer,' while the defendant's is called 'the Great Home Remedy, Kennedy's Pain Killer.' The grievance of the complaint is, of course, the use of the words 'Pain Killer.' The judgment concludes thus: "I have not thought it necessary to go through the cases on the law of trade-marks, which is now well understood. The application of it to particular cases is the difficulty. I will only refer to the language of Lord Cranworth in *Farina v. Silverlock*; it is peculiarly apposite to the case before me. Judges may occasionally have erred in the application of the law to particular facts, but I apprehend that the law is perfectly clear—that any one who has adopted a particular mode of designating his particular manufacture has a right to say, not that other persons shall not sell exactly the same article, better or worse, or an article looking exactly like it, but that they shall not sell it in such way as to steal (so he calls it) his trade-mark, and make purchasers believe that it is the manufacture to which the trade-mark originally was applied. The practice of appropriating the trade-mark of others has been reprobated by various judges, and I have no doubt that Lord Cranworth used the word 'steal' to mark his sense of its gross impropriety. In the *Collins Company v. Cowan*, Sir W. Page Wood took occasion to characterise it in language not more severe than just: 'I cannot conceive,' he said, 'of anything short of indictable offences more discreditable than this course of proceeding.'" "The plaintiffs are entitled to an injunction on the terms prayed for by their bill, and to an account as prayed. The decree will be with costs."

MR. CRISP'S SALE OF HORSES.

The relinquishment of the hire of a range of 250 acres of grass land has induced Mr. Crisp to dispose of an extensive draft of surplus stock from the Butley stud. These were sold by auction, by Mr. Bond, at the commodious sale establishment, adjoining the Melton station, some six miles from Butley, and of ready access by rail from all parts of the Eastern Counties. The catalogue embraced some seventy-five lots, including, according to the auctioneer's description, four first-class Suffolk stallions, twenty-four brood-mares and fillies, and twenty-three foals, geldings, and yearling colts, besides an assortment of twenty-one hunters, hacks, and unbroken colts, for saddle and harness. The stallions, although described as first-class, could hardly be said to be of the A 1 stamp, inasmuch as the highest price obtained was short of £40. We may just remark, that it was unlikely the vendor would submit to unreserved sale the "Champions," "Conquerors," and "Cup-bearers" which have rendered his name so conspicuous in the prize list, such goods being principally reserved for the demand of Prussian agents, German barons, and such like, at figures not likely to be reached at a draft sale.

The best of the stallions, a white-faced four-year-old, May Duke, went into the neighbourhood of North Norfolk, and if a little bigger and more level, might have done well in the home-district. Among the brood-mares were several remarkably well-bred ones, but very rough from the mares, and rather undersized, so that they did not reach long figures. The agent for Lord Derby secured one or two; others were bought for Wilts, Essex, and Buckinghamshire; the highest-priced mare and foal making £77, and the next three £50 each. The best 1 and 2-year-old fillies were bought to remain in the county, the natives having an eye to pedigree, several of the lots straining back through the mares' side to the dams of Catlin's Duke, winner of the first prize at the Royal Show at Windsor, Crisp's "Conqueror" sold for 300 guineas, and other celebrated winners, Messrs. Wolton, Biddell, Capon, and others, having their especial picks out of the list. Among the riding horses were several remarkably handsome well-bred animals, the highest price, 107 guineas, being given by Mr. Grout, for a brown carriage colt. There was a large attendance of county breeders, and the sale was conducted in a manner, for despatch and convenience, very creditable to the auctioneer. The total amount was just about £2,000, a very respectable sum for a tenant farmer's sale of surplus horse-stock.

THE POLICE PRESERVATION OF GAME ACT.

SIR,—At the nomination for South Leicestershire Mr. Paget is reported to have said that he "was decidedly opposed Lord Berners' Act for employing the police to assist in the preservation of game."

Mr. Pell said as little about the game as he possibly could, and nothing about the Police Preservation of Game Act.

Mr. Pell is the Chairman of the Chamber of Agriculture, and Lord Berners, I see, has just enrolled himself amongst the members.

Does the Chamber of Agriculture mean to go for or against the Police Preservation of Game Act? And how far will Lord Berners go with the Chamber?

I was told on its being originated that the Chamber of Agriculture would take up the game question.

In what way?

Let there be no disguising the fact that this Police Game-keeper Act is one of the most unpopular measures amongst the tenant farmers that ever was passed; and if the Chamber of Agriculture holds to its promise to look to matters affecting agriculture in Parliament, it must look to this perhaps above all others.

I see that the Chamber is about to take up the subject of County Rates, but how can it touch one without going into the other? The more police the more rates, and the more game the more police. If Mr. Jasper More would avoid the fate of Mr. Albert Pell, he must speak out on this matter.

Yours,

NO DOUBTFUL CUSTOMER.

BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

The Council have determined to hold their next meeting at Falmouth, during the Whitsun week, 1868. From the stock prize-sheet just issued it appears that the society offers no less than £1,150 in prizes for cattle and poultry. In the prize-sheet, Devon, Hereford, and Shorthorn cattle are placed on the same footing. In the sheep classes several additions have been made; prizes are now offered for Leicester, Cotswold, Southdown, Hampshire Down, other Down, and Somerset and Dorset horn sheep, and there are two special classes for Exmoor and other horned mountain, and for Dartmoor and other moor sheep, to be shown in their wool. In the horse classes there are prizes of £25 and £15 for agricultural stallions foaled before 1866, £20 and £10 for agricultural stallions foaled in 1866, £15 and £5 for mares and foals or in foal, and £10 and £5 for fillies foaled in 1866. In the hunter classes £25 and £10 for mares or geldings foaled before the 1st of January, 1864, ditto for those foaled in 1864, £15 and £5 for fillies or geldings foaled in 1865, £10 and £5 for colts or fillies foaled in 1867, £15 and £5 for hacks, mares, or geldings, and the usual prizes for ponies not exceeding 13 and 14 hands high. As a means of encouraging the horse show the Council have resolved at the forthcoming meeting to reduce the charge for horse-boxes in the show-yard to the uniform rate of £1 for each animal. In the pig classes the usual prizes are offered for animals of the large and small breeds. To encourage proficiency in the horse-shoeing, Mr. Miles, of Exeter, again offers three prizes, it being stipulated that no man who has won a first prize in this competition will be eligible to enter.

BUTTER AND CHEESE FACTORIES.—Forty years ago the State of New York grew a surplus of grain (wheat) for exportation, and "Genesee flour" was known and prized in many foreign markets. Canal boats took in wheat at almost every storehouse, from Syracuse westward, and brought it to Troy, Albany, and this city, for manufacture and sale. Now, all is changed. The Genesee valley is no longer mainly devoted to wheat; even the counties west of Cayuga Lake no longer grow their own grain. Sheep husbandry, once popular, is now on the wane. Dairying is rapidly supplanting all other farming in our rural districts, and we judge that the next census will return thrice the number of cows in our State reported in that which preceded it by a decade; and even dairying itself is undergoing a decided and rapid transformation, through the introduction and multiplication of factories for the systematic and wholesale production of butter and cheese. These factories are located near the centre of each radius of three or four miles wherein grass and cows abound—usually but one in a township as yet, though they are being rapidly multiplied. A mill-stream and water-power often determine the site, though we believe a small engine and boiler (four to ten horse) are preferred to a water-power. A cold and copious spring is well nigh indispensable; a good stock of ice, well stored and saved, is desirable. A large reservoir (like a cellar) is dug in the ground and tightly walled with planks; board platforms extend into this, floating on two or three feet of water, constantly renewed from the spring. In this reservoir, deep pails or cans are set and filled three-fourths full of milk—they sinking and floating in a like depth of water. The milk remains here 24 to 36 hours, when the cream is taken off and churned by steam or water-power—6 to 24 churns being operated at once, with no draught on human muscle. The butter thus made each day, from cream in the very highest condition, is of such uniform and superior quality as to bring from 5c. to 10c. per pound more than fair farm dairies will command; and the milk thus skimmed is then made into cheese, rather mild in flavour, but palatable, and of very fair quality. We never wish to eat better than some of this, made wholly of skimmed milk, and sold by the makers at 10c. per pound to their entire satisfaction. It is cheaper than pork, and may be substituted as a staple article of diet for labouring men, to their great advantage and comfort. The milk is brought in by the farmers of the vicinage, weighed as received, and placed in the cooling vat as afore-said. The farmers generally receive a dividend of the

proceeds, but the better plan is fast gaining ground of paying the cash for it as fast as received, it being speedily turned into butter and cheese, which are cash articles. We estimate that the dairy produce of our State will be increased at least one-fourth by the general introduction of these factories, and that the value of our grass lands will thus be enhanced at least 10 dols. per acre.—*New York Tribune.*

MALT.—The quantity of malt charged with duty in England in the first nine months of this year was 25,951,111 bushels, as compared with 30,327,414 bushels in the corresponding period of 1866, and 27,833,075 bushels in the corresponding period of 1865. The quantity made free of duty for distillation and export was 355,092 bushels to Sept. 30 this year, as compared with 346,366 bushels in 1866, and 413,647 bushels in 1865 (corresponding periods). The quantity made free of duty for cattle-feeding purposes to Sept. 30 this year 1,565 bushels, as compared with 11,040 bushels in 1866, and 45,867 bushels in 1865 (corresponding periods). The total quantity of malt charged with duty and made duty free in England in the first three quarters of this year was thus 26,306,665 bushels, as compared with 30,684,820 bushels in the corresponding period of 1866, and 28,291,579 bushels in the corresponding period of 1865. In Scotland the quantity of malt charged with duty to Sept. 30 this year was 1,513,670 bushels, as compared with 1,748,861 bushels to the corresponding date of 1866, and 1,570,846 bushels to the corresponding date of 1865. The quantity of malt made free of duty for distillation and export to Sept. 30 this year was 2,117,487 bushels, as compared with 2,242,863 bushels in the corresponding period of 1866, and 2,514,577 bushels in the corresponding period of 1865. The total quantity of malt made in Scotland to Sept. 30 this year was thus 3,631,157 bushels, as compared with 3,989,723 bushels in the corresponding period of 1866, and 4,085,423 bushels in the corresponding period of 1865. In Ireland the quantity of malt charged with duty to Sept. 30 this year was 1,436,417 bushels, against 1,594,079 bushels in the corresponding period of 1866, and 1,499,695 bushels in the corresponding period of 1865. The quantity of malt made free of duty for distillation and export to Sept. 30 this year was 473,716 bushels, as compared with 434,801 bushels in the corresponding period of 1866, and 443,433 bushels in the corresponding period of 1865. The malt production of Ireland to Sept. 30 this year was thus 1,910,133 bushels, as compared with 2,029,480 bushels in 1866, and 1,933,126 bushels in 1865 (corresponding periods). The total quantity of malt made in the United Kingdom in the first nine months of this year was thus 31,840,958 bushels, as compared with 36,704,123 bushels in 1866, and 34,310,130 bushels in 1865 (corresponding periods).

CONSTIPATION.—This is a condition which probably, not amounting to disease, yet prevailing to such an extent in all animals, doubtless favors the existence or commencement of such. It, therefore, demands our consideration. In the horse tribe, no matter to what kind of work he is put, we find some animals which are subject to costiveness, and others of an opposite character. When such symptoms as loss of appetite, with difficulty in evacuating the intestines, become apparent—particularly if signs of abdominal pain are also present—it is high time to render assistance in order to ward off the resulting condition which will be more or less troublesome, if not fatal. Treatment: Moderate exercise, change of food to that of a laxative nature, which should be regularly supplied. This should consist of green plants, as clover, rye, or vetches; or in their absence, turnips, carrots, bran, &c. A mild laxative may be given with enemata of tepid water if required. To prevent obstinate constipation is to prevent disease, and the main secret is to observe a regular system of diet and exercise. In foals, constipation often becomes dangerous shortly after birth, from the accumulation and hardening of excrement within the bowels prior to birth. The symptoms are those of urgent colic, and need treatment of a similar character, such as enemata of tepid water, and medicine of a laxative nature; probably one of the best draughts is tincture of rhubarb, one or two ounces, in tepid water.—On the Diseases of Farm Horses, by George Armistead, M.R.C.V.S., in Transactions of Highland Society.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT
FOR DECEMBER.

The weather having been seasonably fine, considerable progress has been made in farm labours during the past month, and the winter wheats have come up with much regularity. The condition of the wheats on sale in the whole of the leading markets has been very middling. Selected samples have, therefore, moved off steadily, at, in some instances, a slight advance in the quotations; but low and middling qualities have commanded very little attention on former terms. The future course of the wheat trade is free from those difficulties with which it is frequently surrounded. In the first place, the new crop of English wheat is turning out quite as limited as was reported shortly after the close of harvest-work. In the second, there is a very large consumption going on, but there is now very little to apprehend from a scarcity of foreign produce. No doubt, the importations during the next two or three months will not be on the same extensive scale as they now are, owing, in some measure, to the closing of the navigation up the Baltic; but it is necessary to remark that there are still about 1,500,000 quarters of wheat and flour on passage from the South of Russia, Australia, and the United States. This amount of supply will be all required; but it will tend to prevent any decided upward movement in the quotations. Any fall in price seems entirely out of the question. There has been an improved inquiry for fine barley, at fully previous rates. Grinding and distilling sorts have changed hands slowly. Oats have slightly receded in price, but most other kinds of produce, including flour—the imports of which have been on a very large scale—have ruled about stationary.

France is still a large food-importing country. From that quarter, therefore, we shall import very little wheat or flour next year. The crop of wheat in California and Australia is large, and of full average quantity. Doubtless we shall receive nearly the whole of the surplus produce, provided that adequate tonnage can be found.

We regret to find that potatoes are turning out badly in the whole of our leading counties. The consequence is that, in the metropolitan markets, the best samples have advanced to 180s. per ton. This price is 50s. per ton more than they were worth at this time last year, whilst it is apprehended that the quotation will advance to upwards of 200s. per ton. The imports of potatoes from the continent have fallen off.

The wool trade has been in a most inactive state, and a further heavy fall, occasioned by unusually heavy importations from our colonies, has taken place in the quotations, viz., 2d. to 3d. per lb. The public sales of colonial wool passed off heavily; nevertheless, upwards of 100,000 bales were disposed of, leaving 10,000 bales over for the next series, which are not expected to be very large. The sales to be held in May next—by which time a large portion of the new clip from Australia will be at hand—are expected to try the market severely.

The influx of foreign hops having been unusually large, and in improved condition compared with some former years, the hop trade has been in a most inactive state, and prices generally have given way to some extent. The supply of English hops on offer has not increased.

The quantity of cattle food on hand for immediate use is very large, and of excellent quality. The outlay, therefore, on the part of our feeders of stock will be very moderate during the winter. Cakes, both English and foreign, have sold slowly, and the quotations have been with difficulty supported.

The supplies of wheat on sale in the various Scotch markets have been very moderate. Sales, however, have progressed slowly, at about stationary prices. The sale for fine barley and oats has continued steady, but the transactions in other kinds of produce have been on a very moderate scale, but without leading to much change in the quotations.

In Ireland very little has been passing in wheat. Holders, however, have shown no desire to sell except at very full prices. Otherwise, the trade, although about average exports have been made to England, has been in a most inactive state.

REVIEW OF THE CATTLE TRADE DURING THE
PAST MONTH.

The show of beasts for Christmas consumption having been very extensive, and of prime quality, and the supplies of dead meat from Scotland and various parts of England unusually large, the beef trade, although it has represented large sales, has been otherwise than active. Prices, therefore, have been very moderate when compared with several previous years. A few very superior Scots and crosses have realized 5s. 2d., and even 5s. 4d., per 8lbs., in the Metropolitan Cattle Market; but the more general quotation has not exceeded 5s. per 8lbs.

About average supplies of sheep have come to hand in prime condition. The demand for all breeds has been somewhat inactive; nevertheless very little change has taken place in the quotations. The best Downs and crosses have changed hands at 4s. 10d. to 5s. per 8lbs.

The few calves brought forward have sold slowly, but at high quotations.

In the value of pigs very little change has taken place. The supplies have been only moderate for the time of year.

The Norfolk "season" for beasts is now commencing. It is stated that the number of beasts on hand in that county ready for the butcher considerably exceeds last year.

The imports of foreign stock into London have been as follows:—

	Head.
Beasts	5,000
Sheep	31,773
Calves	772
Pigs	791

Total	38,336
Same time in 1866	34,658
The total supplies shown in the Metropolitan Market were—	Head.
Beasts	21,910
Cows	312
Sheep	92,490
Calves	943
Pigs	1,880

COMPARISON OF SUPPLIES.

Dec.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1866	20,750	200	71,390	1,053	1,950
1865	31,720	470	126,170	2,823	2,930
1864	23,780	470	78,410	1,441	2,780
1863	29,302	485	88,470	1,150	2,600
1862	25,810	536	85,621	1,354	3,082
1861	24,840	470	84,630	701	2,950

The arrivals of English, Scotch, and Irish stock during the month thus compare with the three previous years:—

From—	Dec., 1867.	Dec., 1866.	Dec., 1865.	Dec., 1864.
Lincolnshire, Leicestershire, and Northamptonshire	9,700	7,800	10,500	8,500
Norfolk	2,000	—	700	1,200
Other parts of England	2,500	2,700	4,700	3,200
Scotland	1,710	1,360	2,243	1,901
Ireland	1,042	2,020	1,150	1,070

Beef has sold at from 3s. 4d. to 5s. 2d.; mutton, 3s. 4d. to 5s.; veal 4s. 4d. to 5s. 4d.; and pork 3s. 2d. to 4s. 2d. per 8lbs., to sink the offal.

COMPARISON OF PRICES.

	Dec., 1866.	Dec., 1865.	Dec., 1864.
Beef from ...	s. d. 3 4 to 5 6	s. d. 3 2 to 5 6	s. d. 3 6 to 6 0
Mutton	s. d. 3 8 6 4	s. d. 3 8 6 8	s. d. 3 8 6 2
Veal	s. d. 4 2 5 10	s. d. 4 0 5 0	s. d. 4 4 5 6
Pork	s. d. 3 6 4 6	s. d. 4 0 5 4	s. d. 3 6 5 0

About 6,000 tons of foreign meat have been disposed of in Newgate and Leadenhall markets; whilst the supplies of English and Scotch have been very extensive. Sales have progressed steadily, as follows:—Beef, from 3s. 2d. to 4s. 6d.; mutton, 3s. 2d. to 4s. 6d.; veal, 3s. 10d. to 4s. 6d.; pork, 3s. to 4s. 2d. per 8lbs. by the carcase.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

December has been as fickle a month as any during the course of this extremely changeable and eventful year. The first day opened warm and spring-like, when it suddenly changed to intense cold, to the delight of skaters and the apprehensions of many that we were going to have an unusual set-in of frost. Then came an altered temperature, with storms and frightful shipwrecks off the British coast and convulsions of Nature throughout the world. Then there were fluctuations at a moderate rate, leaving the season open till we were brought to Christmas. We rejoice that the frost did not continue, for the sake of those out of employ, as the pressure upon destitute families would have been scarcely supportable. But with the Fenian element yet alive, we are by no means sure of a happy time, notwithstanding the increase of the constabulary force. Let us, however, hope for the best, and that the New-Year will partly make up by its geniality for the defalcations of 1867. Discount is still at a low rate, with all our difficulties; yet there is no speculation in corn, and thus the new era of free-trade leaves to a consumptive demand the regulation of prices; and the vast increase of the world's population prevents the accumulation of stores, even in prosperous years. The changes of the month have done nothing to alter prices, the first week's loss of 1s. per qr. on wheat being recovered by the last; while the course of trade, rather than the stimulus of paying prices, have brought very fair arrivals to our shores. Will these continue? is the question that will settle the future price of bread. That home produce and imports will suffice for about four months we feel no doubt; but between that period and harvest will be the time of trial, which we nevertheless hope will be passed without much pressure. It is, however, now a fact almost beyond dispute, that Germany has about suffered equally with France, and that many districts in Russia have not escaped the general visitation. In the midst of this, Hungary appears like an oasis in the desert, and that small, spirited people have been made by Providence masters of the situation, till the icy bonds of a North American winter loosen the pent-up cargoes in the canals and lake-ports, to contribute all they can to the wants of England and the continent. An early break-up will therefore be a signal blessing, and this will be dependent upon Him who "gave to the sea his decree," and has equal control over the four winds of heaven. The following prices were recently quoted at the several places named: The best white wheat at Paris was quoted 79s. 3d.; red, 76s. per qr. Native red at Antwerp 74s., at Courtrai 74s. 6d., at Louvain 71s., white Zealand at Rotterdam 76s. 6d., Mecklenburg red at Hamburg 68s. 6d., Saale 68s., red at Cologne 66s., at Frankfort 67s. 6d., at Mayence 66s. 6d., high-mixed at Danzig 82s. per qr., cost, freight, and insurance included, to London

for spring. In Poland the yield was only considered 47 per cent. of an average. At Rostock the price of the best red for spring shipment was 69s. per qr.; at Stettin 61lbs. per bushel red was quoted 65s. 6d. At Adelaide rates had fallen to 5s. per bushel. In Montreal spring wheat was quoted 52s. 8d. per 480lbs.; No. 1 spring wheat at New York 65s. per 480lbs., with a very firm market, in consequence of the frost detaining many cargoes in the lakes and canals.

The first Monday in Mark Lane commenced on fair English arrivals of wheat, with plenty of foreign. The show of fresh samples from Kent and Essex during the morning was limited, but there was great heaviness in the trade. A few of the best samples moved off slowly, at unaltered rates; but later those who bought could supply themselves at a reduction of 1s. per qr., while the bulk of inferior remained on hand. Though a sharp frost had set in, likely to cut off Baltic supplies, the demand for foreign was very limited, and to have sold largely would have required a like reduction in the rates. Though not many floating cargoes were on offer, prices were down 1s. per qr. The country wheat markets varied this week: some, instead of any decline, evinced a firmer aspect, as Lynn and Gainsborough. Many accepted the London reduction of 1s.; Newark was 1s. to 2s. per qr. cheaper, Chichester and Dunstable 2s. to 3s. per qr. There was a fall of 1s. per qr. at Glasgow and Edinburgh, but Dublin was dull; Dundalk and Waterford were 6d. per barrel cheaper.

The second Monday had a diminished English supply, but there was a large increase upon the previously heavy foreign arrivals. The show during the morning on the Kentish and Essex stands was only moderate; and with some improvement in the condition, consequent upon sharp frost, the primest parcels went off more readily than of late; but there was no demand for inferior, and the bulk remained undisposed of. With such a liberal arrival of foreign, great part of which was from America, spring sorts from that country were sold from the ship's side at 1s. less, though some holders preferred landing. Fine white and high-mixed Danzig were no lower, nor were floating cargoes, there being some foreign demand. The country this week took the hint of firmness in London to ask an advance generally, and obtained it; but there were some exceptions. Very many were up 1s., as Birmingham, Banbury, Newark, Rotherham, and Salisbury. Others advanced 1s. to 2s., as Boston, Mansfield, and Wolverhampton, and Liverpool was up 3d. to 6d. per cental. On the other hand Hull noted a decline of 1s., and Croydon was down 2s. per qr. While Edinburgh was rather cheaper for wheat, Glasgow reported an improvement of 6d. per boll on red American. At Cork there was no change of value, and it was the same at Dublin,

The third Monday opened with small English wheat supplies, but the foreign arrivals were larger than for some time past, much being from the United States. During the morning, the number of additions to the Kentish and Essex samples was but moderate, but the change to mild damp weather made the condition for the most part wretched. Notwithstanding a general improvement in the country, it was only possible to sell picked dry samples at the previous currency, the remainder being below millers' wants. Notwithstanding the immense foreign supplies and mild weather giving a prospect of further supplies, the trade did not give way, importers preferring to store their grain to accepting any lower rates. The little business done, therefore, was on fully the previous terms, there being a few country buyers. Cargoes afloat were in but moderate request, at unaltered rates. This week there was much less presented in the country for sale, the general reports from the several markets noting an upward tendency in prices, while at many places there was an advance of 1s. per qr., as at Boston, Bourne, Sleaford, Rotherham, and Gloucester. Glasgow, however, which had risen in American wheat when it was quoted lower in London, was 6d. per boll cheaper. Edinburgh was in calm. At Dublin the trade was exceedingly limited, without quotable difference in prices, and so it was at Cork.

The fourth Monday had small English supplies, and a further increase upon the previously large arrivals, there being near 42,000 qrs. from America alone. The show of samples from Essex and Kent during the morning was limited, and nearly all in very bad condition, and of poor quality. There being, however, a few samples of really fine, its scarcity caused a ready sale, at 1s. per qr. advance; while inferior sorts were a worse sale than before, in consequence of there being so large a bulk of foreign to compete with them. High-mixed Danzig and all the best old foreign were fully as dear, and rather improved in value, but the quantity of spring American offering disposed some holders to accept rather lower terms. The floating trade was calm.

The imports into London for four weeks were 25,570 qrs. English, 193,539 qrs. foreign, against 20,062 qrs. English, 113,873 qrs. foreign, in 1866. The imports into the kingdom for four weeks ending 14th December, were 3,467,706 cwts. wheat, 500,350 cwts. flour. The general averages commenced at 68s. 11d., and closed at 67s. 3d.; those of London commenced at 71s. 2d., and closed at 68s. 10d. per qr. The exports of wheat from London, in four weeks, were 12,110 qrs. With good weekly country arrivals, and heavy supplies from America, the flour trade has ruled dull, both sacks and barrels having given way 1s. respectively. Norfolks, though nominally quoted 48s., were scarcely saleable over 47s.; New York barrels were very few of them worth over 37s. per barrel, but some fine quality Canadian lately received had brought 42s. The top price of town-made has continued 64s. per sack. The arrivals into London for four weeks were, in country sorts, 85,590 sacks, foreign sacks 2,223, barrels 128,440, against country sacks, in 1866, 92,780, foreign 4,480 sacks and 10,612 brls.

With only one heavy arrival of foreign barley on the third week, all descriptions have met with a quiet demand, at scarcely any difference in values. The very high price of maize has served to maintain the rates of grinding foreign; but the dulness in the malt trade has kept malting sorts from any advance. The arrivals for four weeks into London were 14,414 qrs. English, 70,463 qrs. foreign, against 16,457 qrs. English, 49,590 qrs. foreign for the same period in 1866. The malt trade has had a constant downward tendency, and most limited enquiry, brewers complaining that their usual demand has fallen off by nearly one-half.

The oat trade has fluctuated with the arrivals. The moderate foreign supplies for the first fortnight occasioned a brisk trade and advance of 1s. per qr., which was lost during the last fortnight by the supplies being more than doubled. The circumstance that these heavy arrivals came at Christmas, when business is usually dull, placed importers under the necessity of sending the bulk to granary, where stores have recently accumulated; but as the northern ports are now ice-bound, these are pretty certain to be worked off in the winter at an advance probably that will pay the landing charges, unless the market is better supplied with English. The imports for four weeks were 23,941 qrs. English, 249 qrs. Scotch, 3,615 Irish, 186,156 qrs. foreign, against 12,565 qrs. English, 746 qrs. Scotch, 4,388 qrs. Irish, 175,805 qrs. foreign for the same period in 1866.

The arrivals of maize during the month have been very scanty, and are likely to continue so, in consequence of its failure in America: prices, therefore, have ruled high, but this has made the demand strictly retail.

Beans have given way in value during the month 1s. to 2s. per qr. from the slackness of the demand, though the foreign arrivals this month have been little more than half what they were in November. Ticks and mazagans are scarcely worth over 40s.

Though the pea crop has failed in the Baltic, and there has been even a demand from Sweden for white boilers from that country, the arrivals from America have been so liberal that prices have given way during the month about 3s. per qr. Hog peas have remained without much change. The arrivals into London for four weeks were 3,117 qrs. English, 23,178 qrs. foreign, against 3,777 qrs. English, 15,722 qrs. foreign last year.

Linseed has been firm at a high range of prices through the month, in consequence of limited supplies; and there seems no prospect of any abundance for some time to come. Cakes have sold well, from the high price of corn.

The seed trade has continued in abeyance, the fluctuations in the value of cloverseed in France having had little influence on this side the Channel, as the English samples already exhibited show that we have grown some fine qualities this year, whatever may be its quantity. The same dulness has ruled in mustardseed; and but little has been doing in canaryseed since the advance. The overleft samples of winter tares can only be sold for feeding purposes at comparatively low prices; but the quantity on hand is not large.

CURRENT PRICES OF BRITISH GRAIN AND FLOUR
IN MARK LANE.

		Shillings per Quarter.	
WHEAT, Essex and Kent, white...	old 78 78...new 84 to 74	69 72...	64 70
Norfolk, Lincoln, and Yorkshires, red...			64 70
BARLEY,	34 to 38...Chevalier, new 39 45		
Grinding,	34 35...Distilling	36 40	
MALT, Essex, Norfolk, and Suffolk 63 67.....	extra 69 00		
Kingston, Ware, and town-made 63 67.....		69 00	
Brown		50 57	
RYE		43 48	
OATS, English, feed 25 to 32.....	Potato	29 34	
Scotch, feed	Potato	29 34	
Irish, feed, white 34 36.....	Fine	28 32	
Ditto, black	Potato	27 32	
BEANS, Masagan	Ticks	40 43	
Harrow	Pigeon	46 54	
PEAS, white, boilers..46	Maple 46 to 47 Grey, new 43 45		
FLOUR, per sack of 280lbs., Town, Households		57 64	
Country, on shore	47 to 48	51 54	
Norfolk and Suffolk, on shore		46 48	

FOREIGN GRAIN.

		Shillings per Quarter.	
WHEAT, Danais, mixed	72 to 73.....old, extra 78 to 85		
Königsberg	70 74.....extra	73 77	
Boston	71 75.....fine	73 78	
Silesian	67 73.....white	69 75	
Pomera, Mecklenburg, and Uckermark	red old	69 75	
Russian, hard, 60 to 65.....	St. Petersburg and Riga 64 70		
Danish and Holstein, red 68 70.....	American 68 70		
French, none	Rhine and Belgium	68 73	
Chilian, white 72	Californian 75	76 79	
BARLEY, grinding 39 to 35.....	distilling and malting 37 40		
OATS, Dutch, brewing and Poland 26 to 32.....	feed 24 27		
Danish and Swedish, feed 27 to 30.....	Stralsund	37 38	
Canada 26 to 27, Riga 27 to 28, Arch. 27 to 28, P'sbg. 28 30			
TARES, winter, per bushel	5s. 6d. 6		
BEANS, Friesland and Holstein		42 48	
Königsberg	41 to 45.....Egyptian	42 43	
PEAS, feeding and maple..42	43.....fine boilers	44 47	
INDIAN CORN, white.....	45 47.....yellow	50 55	
FLOUR, per sack, French..50	55.....Spanish, p. sack 50 55		
American, per brl.....	29 34.....extra and d'ble 33 37		

COMPARATIVE AVERAGES.

WHEAT.		BARLEY.		OATS.	
Years.	Qrs. s. d.	Qrs. s. d.	Qrs. s. d.	Qrs. s. d.	Qrs. s. d.
1863... 99,402	41 1	81,456	33 10	11,740	19 3
1864... 78,074	38 4	84,279	28 8	8,891	19 10
1865... 91,844	46 8	81,970	32 9	7,387	22 11
1866... 71,022	60 3	73,583	45 7	8,670	24 5
1867... 60,764	67 3	68,470	40 8	11,383	25 5

AVERAGES

FOR THE LAST SIX WEEKS.		Wheat.		Barley.		Oats.	
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Nov. 9, 1867.....		70 1	43 0	26 1			
Nov. 16, 1867.....		70 1	43 7	26 1			
Nov. 23, 1867.....		68 11	41 5	25 8			
Nov. 30, 1867.....		68 5	40 5	25 9			
Dec. 7, 1867.....		68 1	40 2	25 9			
Dec. 14, 1867.....		67 8	40 8	25 5			
Aggregate of the above		68 10	41 4	25 9			
The same week in 1866.....		60 3	45 7	24 5			

LONDON AVERAGES.

Wheat	4361 qrs.	68s. 10d.
Barley	1146 „	43s. 0d.
Oats	604 „	34s. 11d.

BRITISH SEEDS.

MUSTARD, per bushel, brown 14s. to 16s. white	9s. 10 11s.
CANARY, per qr.	68s. 76s.
CLOVERSEED, red	56s. 72s.
CORIANDER, per cwt.	20s. 21s.
TARES, winter, new, per bushel	6s. 7s.
TRIFOIL	21s. 23s.
RYEGRASS, per qr.	18s. 20s.
LINSEED, per qr., sowing 70s. to 72s., crushing	62s. 70s.
LINSEED CAKE, per ton	£11 15s. to £13 5s.
RAPESEED, per qr.	56s. 60s.
RAPE CAKE, per ton	£5 10s. to £6 0s.

FOREIGN SEEDS.

CORIANDER, per cwt.	21s. to 22s.
CARAWAY „	43s. 44s.
CLOVERSEED, red 56s. to 64s., white	68s. 80s.
TRIFOIL	18s. 21s.
RYEGRASS, per qr.	17s. 18s.
HIMPSEED, small 38s. per qr., Dutch	60s. 43s.
LINSEED, per qr., Baltic 58s. to 60s., Bombay	68s. 69s.
LINSEED CAKE, per ton	£11 10s. to £13 0s.
RAPESEED, Dutch	58s. 60s.
RAPE CAKE, per ton	£5 10s. to £6 0s.

HOP MARKETS.

Mid and East Kent	£8 15	8 15	10 10
Weald of Kent	6 0	6 10	7 7
Sussex	6 0	6 6	6 15
Farnham	8 0	8 15	10 0
Bavarians	4 10	5 12	7 0
Belgians	3 15	4 4	4 15
Yearlings	5 10	6 0	6 15

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—s. s.		CHEESE, per cwt.—s. s.	
Friesland	114 to 120	Cheshire	56 to 74
Jersey	88 104	Dble. Gloucester	56 60
Dorset	120 128	Cheddar	68 76
Carlow	— —	American	48 58
Waterford	— —	HAMS: York	— —
Cork	94 116	Cumberland	— —
Limerick	— —	Irish, new	80 88
Sligo	— —	BACON:—	— —
FRESH, per doz., 13s. 0d. to 16s. 6d.		Wiltshire	60 61
		Irish, green	50 54

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Dec. 23.—We have little inquiry now for anything except the best fresh Butter, which is scarce.

Dorset, fine	112s. to 116s. per cwt.
Devon	100s. to 104s. „
Fresh	12s. to 16s. per doz.

CORK BUTTER MARKET, Friday last.—Prices per cwt.

Ordinary, first quality 104s. to 107s., second 90s. to 93s., third 75s. to 78s., fourth 70s. to 73s., fifth 67s. to 70s., sixth 51s. to 54s.; mild-cured, first 120s. to 12s., second 112s. to 119s., third 83s. to 86s. Thirds, fourths, fifths, and sixths of kegs: 4s. per cwt. less. Currency: Ordinary butter 10s. per cwt. less, mild-cured 10s., sponged butter 2s.

ENGLISH WOOL MARKETS.

CITY, MONDAY, Dec. 23.—There has been no improvement in the demand for any description of home-grown wool. So few transactions have taken place on home account that prices may be considered nominal, whilst the inquiry for export has fallen off considerably.

CURRENT PRICES OF ENGLISH WOOL.		s. d. s. d.	s. d. s. d.
FLEECES—Southdown hoggets.....	per lb.	1 3 1 3	1 3 1 3
Half-bred ditto	„	1 3 1 3	1 3 1 3
Kent fleeces.....	„	1 1 1 1	1 1 1 1
Southdown ewes and wethers	„	1 1 1 1	1 1 1 1
Leicester ditto	„	1 1 1 1	1 1 1 1
Sorts—Combing	„	1 3 1 3	1 3 1 3
Clothing	„	1 3 1 3	1 3 1 3

LEEDS (ENGLISH AND FOREIGN) WOOL MARKET,

(Friday last).—There is no material change in demand for English wools; manufacturers buy without speculating for a possibly increased demand, and prices are not altered. Want of confidence generally prevails. The supply of most kinds of foreign wool is abundant, and prices are very moderate, especially for low and middle qualities. Advances from the colonies do not, so far, show a fall proportionate to the range of prices here.

PRICE CURRENT OF GUANO, &c.

Peruvian Guano direct from the Importers' stores, £12 5s. to £13 10s.

Bones, 26 to 28 5s. Ditto Crushed, 26 10s. per ton.	
Animal Charcoal (70 per cent. Phosphate) 26 per ton.	
Coprolite, Cambridge, whole 23 10s., ground 23 to 23 2s. 6d. per ton.	
Sulphur, whole 23 to 23 10s., ground 23 10s.	
Nitrate of Soda, 21s. 6d. to 21s. 10s. per ton.	
Gypsum, 11 10s. Superphosphates of Lime, 25 5s. to 25 5s. per ton.	
Sulphuric Acid, concentrated 1 24s. 1d. per lb., brown 1 71s. 0d.	
Blood Manure, 26 5s. to 27 10s. Dissolved Bones, 26 15s. per ton.	
Linseed Cake, best American brl. 11 10s. to 12 10s., bag 11 to 12 10s.	
Cotton Seed Cake, 22 5s. to 27 5s. per ton.	

E. PURVES, London Manure Company,
116, Fenchurch Street, E.C.

Guano, Peruvian 12 7 6 to 12 8 0	Linseed Cake, per ton—
Do. Upper do. 8 0 0	Amor. thin, bgs. 10 10 0 to 10 15 0
Bone Ash, 4 8 0	English, 11 0 0 to 11 10 0
Nitr. of Soda, p. ct. 0 10 0	0 11 3
Linseed, Bombay, p. q. 3 8 0	3 9 0
Rapeseed, Guzerat 2 15 0	2 17 0
Cloverseed, N. Am. red, new per cwt. (nominal)	

SAUEL DOWNES and CO., General Brokers,
No. 7, The Albany, Liverpool.

Agricultural Chemical Works, Stowmarket, Suffolk	
Prentice's Cornal Manure for Corn Crops	per to 28 0 0
Manold Manure	„ 8 0 0
Prentice's Turbidity Manure	„ 8 10 0
Prentice's Superphosphate of Lime	„ 6 0 0



E. H. 200

A Polled-Scot?

Bred and fed by Mr. William McComb, of Tillyfour, Aberdeen, and the best beast at the Highland Counties and Agricultural Club Show, December 2, 1897.

London. Published by Rogers & Telford, 28, Strand, 1898.

PLATE III.

A POLLED SCOT.

BRED AND FED BY MR. WILLIAM M'COMBIE, OF TILLYFOUR, ABERDEEN.

This ox, calved in 1862, and four years and eight months old in December, was by Black Prince, out of Lady Agnes.

In 1864, at Aberdeen, he took the prize as the best yearling, at the meeting of the Royal Northern Agricultural Society.

In 1867, also at the meeting of the Royal Northern Agricultural Society, he won the 50-gs. Challenge Cup.

At the Midland Counties' meeting, at Birmingham, he took the following succession of premiums: First prize, £15, silver medal as breeder, extra £25 as the best Scot, another prize of 10 guineas for best Scot, gold medal as the best ox or steer of any breed or age, hotel and innkeepers' prize of 30 guineas as the best animal in the cattle classes, and the President's prize of 25 guineas for the best ox or steer of any breed or age, bred and fed by exhibitor.

In London, at the Smithfield Club Show, in the week following, he took the first prize of 30 guineas, as the best beast of his class, with a silver medal to the breeder, the gold medal of £20 to the breeder of the best ox or steer, and the silver cup of £40 as the best ox or steer in any of the classes. He also took Beach's cups in Bingley Hall and the Agricultural Hall, as the best beast fed on the farinaceous food. The entry in the catalogue states that he was fed on grass, straw, turnips, cake, corn, hay, and Beach's food.

On his way from Birmingham to London the Scot was taken, by command of her Majesty, to Windsor, where he remained for one night at the Home Farm. After the culmination of his success at the Smithfield Club, Mr. M'Combie wished to present the ox to her Majesty; but, although the gift was declined, the baron of beef was graciously accepted. The beast was sold, through Mr. Giblett, to Lidstone and Scarlett, the well-known butchers in Bond-street, for £120; and when slaughtered, the baron, consisting of the two sirloins, the two rumps, and two aitch-bones, weighed 632lbs.; the live weight of The Black Prince being 2,588lbs.,

and the dead weight 1,963lbs., which was sold at a shilling per lb. The tail and hair were claimed as "drovers' perkiss;" but the butchers laid a prior claim, and the tail now adorns their shop. Mr. M'Combie stipulated for the head; but no price having been named at the time of sale, it is said that Lidstone and Co. asked £1,000 for it! although they eventually agreed to take £20, and this trophy is now in the furriers' hands. Had the butchers retained the head, it was their intention to have had the skin stuffed for exhibition.

When we first saw this famous beast, at the Birmingham Show, we wrote of him as "very good to meet, with great depth and a fine touch," but as having "little or no grandeur in his appearance, no force of outline, and more commendable as a great heap of good flesh than as a telling specimen of the breed." And at the Smithfield Club Show, again, we said, "There is not an extraordinary beast in the Hall beyond Mr. M'Combie's ox; and his excellence depends far more upon his size and weight than any particular nobility of character." In fact, after all, Black Prince was but the best of a very middling year, and scarcely worthy of the flourish of trumpets with which his entrance and exit were announced. To Mr. M'Combie the history of the ox is associated with one melancholy event, as the beast's attendant, and an old servant at Tillyfour, died almost immediately on his return home—a loss of which his master, writing to the editor of the *North British Agriculturist*, thus speaks; "A sad gloom is thrown over my success; and I am sure you will be very sorry to learn that poor John Benries died suddenly this day week. He never came home so well. He rested two days, and then worked three days on the farm; and in other three days he was dead. There has nothing occurred for many years which has been so severe upon me as the death of John, my honest, faithful, and able servant for seventeen years."

Mr. M'Combie has long been a deservedly high authority on breeding and feeding cattle; and we give accordingly, as quite in place here, his idea of

a good beast, from his book on *Cattle and Cattle-breeders*:—"A perfect breeding or feeding animal should have a fine expression of countenance: I could point it out, but it is difficult to describe upon paper. It should be mild, serene, and expressive. The animal should be fine in the bone, with clean muzzle, a tail like a rat's, and not ewe-necked; short on the legs. He should have a small, well-put-on head, prominent eye, a skin not too thick nor too thin; should be covered with fine, silky hair, to the touch like a lady's glove; should have a good belly, to hold his meat; should be straight-backed, well-ribbed up, and well-ribbed home. His hookbones should not be too wide apart. A wide-hooked animal, especially a cow after calving, always has a vacancy between the hookbone and the tail, and a want of the most valuable part of the carcass. I detest to see hooks too wide apart: they should correspond with the other proportions of the body. A level line should run from the hook to the tail. He should be well set-in at the tail, free of patchiness there and all over, with deep thighs, that the butcher may get his second round and prominent brisket deep in the fore-rib; well-fleshed in the fore-breast, with equal covering of fine flesh all over his carcass, so valuable to the butcher. His outline ought to be such that, if a tape is stretched from the fore-shoulder to the thigh, and from the shoulder, along the back, to the extremity there, the line should lie close, with no vacancies; and, without a void, the line should fill from the hook to the tail. From the shoulder-blade to the head should be well filled up—as we say, good in the neck-vein. I am aware that the preceding remarks as to the quality and proportions a beast should possess must be very unsatisfactory to you, as they are to myself. Scarcely any one animal has possessed them all; and to look for the half of them in a good commercial beast would be vain.

I have consulted no writer upon the subject: they are set down, and not in good order, just as they struck me at the time. Thick legs, thick tails, sunken eyes, and deep necks, with thick skin and bristly hair, always point to sluggish feeders. In cold weather, in the month of May, the old silky coat of the strawyard bullock is of great advantage. If we could get the qualities and proportions I have specified in animals, it would not be difficult to make them fat. It would be difficult only to make them lean, when once in condition. A high standing, want of ribbing up and ribbing home, with the tucked-up flank, always denote a worthless feeder. You must all have observed how difficult it is to bring such cattle into a state for killing. It will take a deal of cake and corn to make them ripe. A great many can never be made more than fresh: it is only a waste of time and money to keep them on." Black Prince was grazed with the other beasts on the farm, receiving a little cake in the winter months; but during last winter and summer he was kept in an open strawyard with folded doors, for protecting him from the severe blasts of winter.

Mr. M'Combie says further: "If store cattle of the Aberdeen and Angus breed, out of our best herds, can be secured, I believe no other breed of cattle will pay the grazier more money, in the North, for the same value of keep;" for the Highlanders are "unsuitable for stall-feeding, as confinement is unnatural to their disposition," and the Galloways "are not so easily finished as our Aberdeens and Angus or cross-bred cattle." Of the Aberdeen or North-country cross, Mr. M'Combie says emphatically, "they are rent-payers. He would be very prejudiced indeed who would not acknowledge their merits;" and "I graze more cross-bred cattle than pure-bred polled."

PLATE IV.

FALSE ALARM; A PRIZE THOROUGH-BRED STALLION.

THE PROPERTY OF CAPTAIN BARLOW, OF HASKETON, SUFFOLK.

False Alarm, bred by Lord Spencer in 1862, is by Trumpeter, out of Treacherous by Pantaloon, her dam Shiraz, by Camel—Medina by Shebdeez—Passamaquoddi, by Lignum Vitæ—Hind, by Sir Peter—Paulina, by Florizel.

Trumpeter, bred by her Majesty at the Royal Paddocks at Hampton Court, in 1856, is by Orlando, out of Cavatina by Redshank. Mr. Harry Hill gave 290 gs. for the Cavatina colt as a yearling, who showed a deal of promise as a race-horse. He won two or three races, and, with poor Alfred Day up, was third to Musjid for the Derby; but one of his legs gave way, and he never appeared afterwards. Trumpeter stood for his three or four seasons at the Harleston Paddocks, Althorpe, and his stock came out as two-year-olds in 1864, when he was credited with seven winners. These were Charity, Hope, Koenig, Hanstead, Merry Harp, Salliet, and Viola, whilst he is also the sire of Alberta, Dulcimer, Hornblower, Plutus, Raven, Salpinctes, Challenge, Lady Bugle-Eye, La Sor-

rentina, Lute, Triumph, Vocalist, Abergeldie, Cornet, Clarion, Duet, Dulcet, Europa, Gloire de Dijon, Lady Edith, Maid of the Mill, Secrecy, and Lady Elizabeth. Trumpeter is now at his old home at Danebury, where as one of the most fashionable sires of the day his subscription has of course long since been full. We rather pride ourselves on having picked out Trumpeter as a very promising young horse at the stud, and we gave his portrait accordingly in June 1864, just as his produce were beginning to show themselves.

Treacherous, a brown mare bred by Lord Westminster in 1839, never ran, but was for nearly twenty years at the stud; in the first instance with John Osborne, then as Mr. Watson's, and lastly as Lord Spencer's, in whose possession she died, after throwing False Alarm, in 1862. The old mare's other produce, including Faithless by Lanercost; The Sheriff, by The Provost; Harleston (afterwards Agrippa's Ghost), by Cotharstone; Mirage, by Cotharstone; Perfidious, by Lanercost; Census,

by Lanercost; Treachery, by Melbourne; Maid of the Morn, by Chanticleer; The Seneschal, by Cotherstone; Iscariot, by Newcourt; The Informer, by Newcourt; two or three foals that died young, and a couple of nameless fillies by Cotherstone.

False Alarm is a chesnut horse, standing sixteen hands high, and good to know by a bald face and four white legs. He has a kind, cheerful head, a light neck, and well-laid shoulder-blades, with the forearm from the point of the shoulder to the elbow long and upright. He has a good middle and back, with the exception of a certain slackness towards the loin, that shows the more the horse is loaded with flesh. He has great quarters, long big arms and thighs, good hocks, flat legs and plenty of bone. With a fine temper and showy action, False Alarm is a very smart nag, especially when kept moving, and by the time he has furnished a bit and dropped to his leg will no doubt still take some beating in the ring.

False Alarm, although not entered in any of the great races, was sent to Taylor, at Fyfield, and came out twice at three years old in Lord Aylesbury's name and colours, but being in reality the property of his breeder, Lord Spencer, and the only one, as we believe, that his lordship ever trained. At Epsom he was not placed for the Craven Stakes; and at Ascot he hit his leg in the race, and as they could not get to work with him for some time afterwards, Lord Spencer ordered the colt home, and sent him up for examination at the Veterinary College. When in training he was considered a good fair horse that could stay, while Taylor spoke to his promise as a hunter, and he lived through one very fast thing in the Marlborough country, when nearly all the other horses out were beat. Lord Spencer also tried him with hounds, when he took to the jumping business very kindly, and Dick Webster declares he was as grand a fencer as a man ever sat on. However, he again fell lame, and had to be thrown up.

With his eye on the Royal hundred at Bury St. Edmund's, Captain Barlow was on the look-out for a horse, and he made an appointment accordingly with Mr. Oldaker to go over to Mentmore to see Robin Hood. On the way from Rugby, False Alarm was mentioned as being in the market, and so they turned off for a view of him. The result was that Captain Barlow got him a bargain shortly afterwards, while curiously enough Robin Hood was bought with the object of winning the thorough-bred stallion prize of the Royal Irish Society, and this he succeeded in doing. False Alarm's lameness got no better in his new stable, and at length the foot became so hot that it was searched, and deep in was found a nail which must have been there for a year or more. On this being removed the horse was of course at once relieved, and he has never been lame since.

False Alarm made his appearance in the ring at the Agricultural Horse Show, in the spring of last year, when he won the first prize of £40 for thorough-bred stallions, beating Mr. J. B. Starkey's Beckampton, the second prize horse, Mr. Calder's Newchurch, Mr. Jackson Lee's Pluto, and one or two others; but, as we said at the time, "with the exception of the winner they were about as poor a class as ever entered a ring."

In the following month, June, at the meeting of the Essex Agricultural Society, at Braintree, he took the All-England prize of £25, for thorough-bred entire horses, beating another of Captain Barlow's, Jonquil, since gone to Spain, and Mr. Crisp's Abbot.

In a week or so afterwards, at the Fakenham Meeting of the Norfolk Agricultural Association, in a class of four thorough-bred horses, False Alarm was not noticed by the single-handed judge, Mr. Ives, Mr. Stiggins taking the first prize, and Lord Hastings' Emilius the second. As we wrote at the time, "Emilius was the more general favourite," as that it was strange False Alarm did not finish a little nearer, the more so when we remember that Mr. Stiggins won.

In July, at the Bury St. Edmund's meeting of the Royal Agricultural Society of England, False Alarm won the chief prize of £100, as the best thorough-bred horse having served mares during the season—which, in the opinion of the judges, is best calculated to improve and perpetuate the breed of the sound and stout thorough-bred horse for general stud purposes." Mr. Merry's Scottish Chief took the second prize of £50, and the Rev. J. W. King's Ratcatcher, by Rataplan, was the third or reserve number. The other horses shown in this class were Mr. Merry's Costa, Captain Machell's Bacchus, and Mr. Goodliff's Tom Tit. The Judges thus officially report on the class:—"The contest was a close one between the first and second horse, and had the question been simply. Which was the better sire for getting race-horses? their places might have been reversed; but we considered False Alarm better adapted for the general purposes which the Society has in view; his action was truer, he had the best feet, and carried himself best—moreover he was giving his opponent a year. The Chief, on the other hand, had a better loin, and somewhat more length." It must be understood, however, that Mr. Oldaker was no party to this report. It has, indeed, been said that he retired immediately on False Alarm entering the ring; but having spent that miserable morning on the show-ground, we beg to say that, so far as we can trust our own eyes, such a statement is not correct. Mr. Oldaker was all there with his fellows; although, as he subsequently assured us, he had no voice in the award over False Alarm, who has not since been out; and having been recently purchased by Lord Middleton, will stand this season at North Grimston, near Malton.

Captain Barlow deserves his reward, and beyond horses in work, mares, and young things, he has for many years had a good thorough stallion at the service of his neighbours in Suffolk. We can remember him with Robinson, of full hunter character, although not always so lucky as False Alarm; next with the pretty little Revenge or Recovery, the moderate Mentmore, and so on to the coarse powerful Middlesex, the especially neat Weatherden, and the stylish Ace of Clubs. All these were prize-horses in turn; but it remained with False Alarm to achieve Royal and London honours, and he will thus occupy a prominent place in the Hasketon Gallery. Certainly, if anything should catch the eye it would be four white legs and a bald face.

THE MANURIAL PROPERTIES OF PURCHASED FOOD.

BY CUTHBERT W. JOHNSON, F.R.S.

Upon this theme, Professor Voelcker lately addressed the members of the Royal Agricultural Society. It is difficult to overstate the importance of this inquiry. A slight retrospective glance at the progress of English agriculture will remind us that its onward course has ever been accompanied, or preceded, by the increased value of the manure of the farm-yard. In the days of the Tudors, when the then little farmers of England had nothing to feed their stock but grass, hay, and straw, the yard manure was not only very limited in bulk, but of a very inferior quality. The reader will remember that I am alluding to days long before the introduction of roots or oil-cake. Even carrots were not cultivated in England till about the year 1540. When, seventeen years later, Tusser published his "Hundred Points of Good Husbandry," he warned the farmer to kill off his oxen at Martilmas, and not to stall-feed them on peas; for he says, in his November Husbandry:

"(For Easter) at Martilmas hang up a beef;
For stall-fed and pease-fed play Pickpurse the thief."

And when he speaks of feeding cattle, in his December Husbandry, he never mentions anything for their food but straw and hay. He says:

"Serve wheat-straw out first, then wheat-straw and pease
Then oat-straw and barley; then hay, if you please."

Such was the poor winter food for live stock, and, of necessity, the poor farmyard manure of the year 1557.

Six years after Tusser wrote (1563), potatoes came to us from America; but more than a century elapsed before we find, in 1682, Old Worlidge alluding to the turnip as a field crop. And it was about the same year that we find the earliest notice of the use of this invaluable root mentioned by Houghton as food for sheep (*Collections*, vol. i., p. 234). Mangolds have only been introduced during the present century; and with regard to cakes, their common use commenced long after the rude farming days to which I have been alluding.

When, however, the great importance of increasing the value of our farmyard manure was, after two or three centuries, well understood by the great cultivators of our island, the researches of the chemist came to their aid. These great agriculturists towards the end of the last century became well aware of the importance of understanding the *chemistry* of food.

Without tracing minutely the results of the chemist's labours in the farmyard from the commencement of the present century, we may usefully refresh our memories with the results obtained not very long since by Messrs. Lawes and Gilbert (*Jour. Roy. Ag. Soc.*, vol. xiii., p. 45). "It is well known," observes Mr. J. B. Lawes, "that the straw of our corn crops, and the solid and liquid excrements of horses and other animals fed in the stables, sheds, and yards, are the substances which contribute to form the heterogeneous mass called 'farm-yard dung.' Let us estimate what proportion of these various matters will, under given circumstances, be included in the complex mass, and thence endeavour to arrive at some conclusion as to its composition. Suppose the case of a farm of 400 acres, farmed on the four-course system, that half of the roots and 100 tons of hay are consumed at the homestead, and that the whole of the straw of the corn

crops is retained at home as food and litter. Let it further be assumed that 12 horses have corn equal to 10lbs. of oats per head per day, and that 10s. per acre are expended in the purchase of cake for feeding stock. Under these circumstances, the following table shows the amounts of the matters enumerated entering into the home manures of the farm in the course of the year. In this, column I. gives the total dry matter, II. the mineral matter or ash, III. the phosphate of lime, IV. the ammonia:

	I. lbs.	II. lbs.	III. lbs.	IV. lbs.
100 acres roots; half the crop=6 tons per acre, consumed at home, give as manure.....	29,568	7,741	1,686	3,050
100 acres barley; at 2,500lbs. straw per acre; 1-5th reckoned as food, and 4-5ths as litter, give as manure ...	198,333	11,138	916	1,473
100 tons of hay consumed at home give as manure	94,080	14,918	2,267	4,024
100 acres of wheat; at 3,000 lbs. straw per acre; 1-5th reckoned as food, and 4-5ths as litter, give as manure ...	235,200	14,850	1,634	2,120
Corn=43,800 lbs. of oats, consumed by horses, give as manure	7,534	1,198	487	900
20 tons of oilcake (linseed, rape, and cotton seed), consumed at home, give as manure.....	9,930	3,295	2,507	2,652
Total	574,645	53,040	9,497	14,935

"These are, as nearly as can be reckoned, the average amounts of the constituents enumerated that would contribute to the home manure of the farm annually. But farmyard manure in the fresh state, and before it has undergone much decomposition, contains about 70 per cent. of water, or 7 parts of water to 3 parts of dry matter. The 574,645 lbs. of dry matter would thus be combined with 1,340,838 lbs. of water, making together 1,915,483 lbs. = 855 tons (or an average of about 8½ tons for each of the 100 acres of root crop) of *fresh undecomposed dung*. In this state its composition per cent. and per ton would be as follows:

	I. lbs.	II. lbs.	III. lbs.	IV. lbs.
Per cent	30.0	2.77	0.50	0.77
Per ton	672	62.0	11.1	17.3

Here we have the constituents of the dung of a farm but then this estimate supposes that all the best portions of the manure are preserved. That its soluble matters are neither allowed to soak into the earth, or mingled with rain-water, drain into an adjoining pond or ditch. These evils, however, are hard to avoid in open farmyards; for as I had occasion to remark in another place, in the home counties of England about twenty-four inches of rain annually fall upon the land. So that if we take a homestead covering only an acre of ground, then upon that extent of surface about two thousand four hundred tons of rain-water, or 528,000 imperial gallons, fall every year. With this large amount of rain is mingled the urine of the live stock, which is much larger in

amount than is always understood. Mr. Ferguson (*Trans. High. Soc.*, vol. 1851, p. 847) calculated the number of gallons daily produced on a farm containing a certain amount of live stock. It is as follows:

Cows, bullocks, and bull	39, at 3 gallons	...	117
Queys	10, at 2½ gallons	...	25
Cattle, one-year-old	20, at 1½ gallons	...	30
Horses, old and young	16, at ½ gallon	...	8
Swine	15, at ¼ gallon	...	7
Total	...	...	187

or for the whole year 67,525 gallons. Allowing that the horses are upon an average employed eight hours per day in the fields, and that the bullocks are also four hours in the fields, and deducting in consequence 8,151 gallons from the annual available amount produced in the farmyard, there remain 59,374 gallons as the produce of a farmyard containing the number of stock he has assumed. The rain-water, moreover, mingles with, and dissolves a portion of the solid excreta of the live stock, and thus the drainage-water from a farmyard contains a variety of valuable fertilizing matters.

These reflections naturally accompany the researches of Professor Voelcker. In reporting the results of some of his labours, so important to my readers, he observes (*Jour. Roy. Ag. Soc.*, N. S., vol. iii., p. 654): "The following list probably includes all or nearly all the articles at the present time brought into the market and employed by the British farmer as auxiliary feeding materials: Linseed, linseed-cake of various kinds, earthen-cake (commonly called nut-cake), rape-cake, cotton-cake (decorticated and undecorticated). These cakes form, so to speak, the first class of purchased food.

"Secondly, we have beans, peas, lentils, and fennugreek. These leguminous seeds form a second class of purchased food.

"In the third class I arrange together the farinaceous seeds—Indian corn, wheat, barley, oats; and, by way of appendix, I add malt, malt-dust, brann, and pollard.

"Then, in a fourth class I put together the following materials, which are now and then in the market, and are useful auxiliary foods: Palm-nut meal, locust-beans, brewers' grains (which may be had at a moderate price by farmers who are well situated for obtaining them), and molasses.

"In every kind of food we find the following classes of food-constituents: Nitrogenous, or flesh-forming substances; and the fat-producing substances, which may be conveniently divided into two groups, in their order of merit: (1) ready-made fat; and (2) sugary or starchy food; ready-made fat being much more valuable than either sugar or starch. Indeed, I shall not be far wrong in saying that one part, in weight, of fat or oil is as valuable as a feeding material as two-and-a-half parts of sugar or starch, or any analogous compounds. Among starchy compounds I include the vegetable jelly pectine, and pectinaceous substances; and not far removed from starch and more digestible pectinaceous matters is the young cellular fibre, which is digestible to a considerable extent, and ought to be taken into account in estimating the value of different articles of food. Then we have in all feeding materials the woody fibre, which, being indigestible, possesses no feeding value.

"Lastly, we have the mineral matters, which play an important part in the animal economy, inasmuch as they supply bone-materials, and also the various salts which are requisite in the formation of blood, and are invariably present in the juices of flesh and other secretions.

"On examining these different classes of food, we find that the relative proportions of their chief feeding-consti-

tuents vary exceedingly. The nitrogenous, or flesh-producing, substances, as they are generally called, although in reality they do not produce, *par excellence*, butchers' meat, are particularly abundant in all kinds of oilcake and leguminous grains, more especially in decorticated cotton-cake, and, next to it in order, earthen-cake. The proportion of nitrogen in leguminous seeds very nearly approaches that in oilcake. Cereal grains contain, on the average, only half the proportion of nitrogenous substances contained in leguminous products. Now the feeding value of the articles of food given to stock really depends not so much on the amount of flesh-forming constituents, or, in other words, on the amount of nitrogen which the different kinds of food are shown by analysis to contain, as on the proportion of ready-made fat, and substances capable of producing it. It must be remembered that in butcher's meat we have invariably a mixture of lean, muscle, fibre, and fat; and the mixture is much more readily produced from food having a fair proportion of albuminous matter, with an excess of starchy substances or of ready-made fat, than from food containing an excess of flesh-forming constituents—albumen, caseine, gluten, or their equivalents. The food, then, which is richest in nitrogen, is not exactly that which produces butchers' meat most readily, or at the lowest cost. The value of oilcakes depends in a great measure on the amount of ready-made fat which they contain. Hence a foreign cake, poor in oil and very hard-pressed, is not equal, as a meat-producing auxiliary food, to good English oilcake not much squeezed in the oil-mill. This perhaps is one reason why hard-pressed Marseilles cake is not so well adapted for the fattening of stock as it is for young stock. The reason why foreign cake is inferior to English cake as a fattening material is, that well-made English cake is generally richer in ready-made fat and oil.

"Regarded merely as feeding materials, the various food-constituents follow each other in value in the following order: (1) ready-made fat and oil; (2) starch, sugar, and pectine; (3) nearly equal to starch or sugar is quite young digestible cellular fibre; (4) then come the albuminous substances—gluten, caseine, vegetable albumen, and analogous materials; (5) lastly, we have mineral substances and woody fibre, possessing scarcely any feeding value.

"The money value of food, however, as I have already intimated, does not depend simply upon the actual amount of feeding materials which it contains, but also upon the value of the fertilising elements which pass through the animal into dung. Let us, therefore, inquire which of the food-constituents easily pass into dung, and what is the money-value of these fertilising constituents.

"First, then, we have to consider whether fat, starch, or sugar easily passes through the animal. They sometimes do pass through. If oilcake, for instance, is badly bruised, or given too abundantly, a good deal of ready-made fat passes through the animal, and considerable loss is thereby experienced; for, though ready-made fat and starch and sugar are most valuable feeding constituents, they absolutely possess no value whatever as fertilising constituents. We should, therefore, aim at as complete assimilation of the fatty or starchy matters in the animal's body as is possible, taking care so to feed the animal that the starchy food-constituents may be as completely burnt up or altered as possible.

"In the next place, we have to consider the nitrogenous matter which passes through the animal.

"All nitrogenous substances contain, on an average, about 16½ per cent. of nitrogen: consequently they produce, on decomposition, a considerable amount of ammonia. For many years we have known that by far the largest portion of nitrogenous matter passes through the

animal, and is recovered in the dung. The loss of nitrogen which the food thus sustains has been variously estimated: by some it is estimated at one-tenth, and by others at one-fifth, of the total amount. Experiments recently instituted on the Continent, however, seem to show that the loss is not so great—probably not more than one-sixteenth part, if so much. Of course, in young stock, a little of the nitrogenous food is required for the building up of the muscle; but even in that case the total amount recovered from the food in the dung is very great in proportion to that which is assimilated by the body, or may be supposed to be lost. And, indeed, some recent experiments, in which everything was carefully weighed, show that the loss is even less considerable than six per cent. It must, however, be borne in mind that excrementitious matter cannot be perfectly collected: some loss will be experienced by a slight fermentation, and so on; and a small proportion of the nitrogen in food will also probably escape by exhalation from the lungs and the skin. Very little of the nitrogen of food is, however, lost by fermentation, or is necessarily lost in the keeping of farmyard manure: the mineral matters, excepting a small fraction only of the total amount of food, pass entirely into the excrements.

"Of the various mineral constituents of food we have only to consider two, namely, potash and phosphoric acid. In estimating the fertilizing value of food-constituents that pass into the dung, we have therefore to deal with: 1, nitrogen (estimated as ammonia); 2, potash; and 3, phosphoric acid. By ascertaining how much of each of these matters passes through the animal, a very close estimate may be formed of the money-value of the dung produced by different articles of food. Mr. Lawes, in a very valuable paper published in the year 1862, gives the average composition of the principal kinds of food; and, from the average composition, by making the proper deductions for loss of nitrogen, the value of the food-constituents which pass into the dung may be estimated with tolerable accuracy. Indeed Mr. Lawes made such an estimate in a circular which he published some ago; at that time however ammonia was much more expensive, and phosphoric acid cheaper; potash has been cheaper since the discovery of the mines in Saxony. The money estimates given by Mr. Lawes are based on the prices current in the year 1862, ammonia being estimated at 8d. per lb., phosphoric acid (calculated as phosphate of lime) at 1d. per lb., and potash at 2d. per lb. In the following estimates I have calculated ammonia at 6d. per lb., phosphate of lime at 1½d. per lb., or one-half more than Mr. Lawes's estimate, and potash at 1½d. per lb., or one-fourth less; these prices agreeing better with the money value at which other fertilizing constituents can now be purchased in the manure market.

"Adopting the data which I have found in various publications, many of which have been carefully collated by Mr. Lawes, I have calculated the value of excrementitious matter from one ton of food consumed, and I find that linseed-cake is worth as a fertilizer alone, making an allowance for loss, £3 15s. 8d. per ton, or somewhat less than the estimate of Mr. Lawes, who puts it above £4; whilst linseed, which I estimate at about 10s. per ton lower than Mr. Lawes did, is worth as a fertilizer only £2 17s. 9d. per ton—a point which ought to be considered in estimating the relative value of the cake and seed as feeding materials. Decorticated cotton is worth as a fertilizer £5 6s. 6d. per ton, according to my rates of charge, which are certainly not too high. The ordinary English cotton-cake contains little more than one-half the amount of nitrogen contained in cake made from the shelled seed; it is also much poorer in phosphate of lime, and is worth only £2 18s. per ton. At the present selling prices of

English cotton-cake, it is, in my opinion, by no means a cheap food, being much dearer in proportion than decorticated cotton-cake. The manurial value of earthen-cake, decorticated, is £4 18s. per ton; undecorticated £2 10s. per ton. Rape-cake, which possesses even a greater fertilizing value than linseed-cake, is worth, according to my estimate, £4 8s. 9d. per ton. Beans, peas, and lentils are worth £3 2s. per ton. All the leguminous seeds have about the same fertilizing value. Indian corn is worth only £1 5s., wheat £1 7s., barley £1 5s., malt £1 6s. There is therefore no very great difference in the cereal grains as far as their fertilizing constituents are concerned. Bran and pollard, which are much richer in nitrogen than the fine flour, are worth £2 15s. per ton. Malt-dust, on account of its manurial value, is one of the cheapest foods that can now be bought; after passing through the animal it is worth £3 11s. per ton, while rice-meal is worth only from 15s. to 25s., according to quality, and if there is much husk it is not worth so much, since the husk of rice consists chiefly of woody fibre and silicious matter, and is not to be compared to the husk of such grain as Indian corn. Palm-nut meal is worth as a fertilizer £1 14s. per ton. Still lower is the value of locust-beans, which are worth as a fertilizer about 18s. 3d. per ton. In the same way brewers' grains are worth 12s. per ton, whilst as a fertilizer molasses has no appreciable value.

"I think we may derive some useful hints from these estimates. We shall find that the money value of purchased food is very much regulated by the value of what passes through the animal; and that, after all, linseed-cake is by no means a dear cake, inasmuch as a considerable portion—fully one-third—of the money expended upon it is recovered in the dung. We may learn also that decorticated cotton-cake, when it can be had at about £9 per ton, is the cheapest cake for those who are anxious to produce good rich manure. Rape-cake is also a very valuable feeding material, and cheap, inasmuch as more than one-half of its cost is returned in the manure; at the present time it can be bought at about £7, and of that £4 is recovered. These are not mere fancy statements, but the result of practical inquiry. The Norfolk farmers pay as much as £5 per ton for rape-cake as manure, and no doubt it is worth as much to them.

"I consider that sufficient attention has never been directed to the money to be recovered in dung by a judicious expenditure for purchased auxiliary food. I sometimes think, with reference to certain materials, that the full money value may be in that way re-obtained. If malt-dust in particular had no feeding value whatever, it might answer to buy it merely as a manure. Another practical lesson to be learnt is that brewers' grains are worth buying, simply for the manure they make; at 3d. or 4d. per bushel they furnish an economical manure, and even at 6d. per bushel they are cheap; hence it is that the London cowkeepers are very anxious to buy them. Perhaps one of the cheapest fattening kinds of food is palm-nut-meal; in it we get more fattening material at a moderate price than in oil-cake; but as it is not rich in nitrogenous matter, a little deduction must be made for its inferiority as a fertilizer."

It is needless for me to add any other observations upon the importance to the agriculturist of these very interesting facts. They are of a class which seems to look like progress; to teem with suggestions which will not be lost upon those who feel and are ever acting upon the conviction that, although we now smile when we learn how they managed the farmyard in the days of good Queen Elizabeth, yet future generations of our island's agriculturists will assuredly regard our present advances as mere stepping-stones to far more profitable results.

PRACTICAL AGRICULTURE IN 1868.

Jan. 1. 1868.—As great improvements, practical and scientific, are continually progressing in our modern British agriculture, it is my purpose during the ensuing year to avail myself of these advances, and to bring them in a practical form before the readers of the *Mark Lane Express*. I shall endeavour to take them up in connexion with the many questions of practical agriculture to be brought forward, in something like order, according to season, and as consecutively as I can arrange them, in anticipation of each succeeding farm operation as it is about to take place on the farm. I cannot, however, be very precise on this point, as so many matters of a practical character in farm management must go on simultaneously, and therefore my remarks cannot particularly apply at the date upon which they appear. I shall begin with the new year. Most farmers find this the most difficult time in the whole year to give profitable employment to their teams or workmen. Winter ploughing, the care of live stock, the management of farm fences and drainage, the leading out and application of fold-yard dung, the thrashing and delivery of corn, form the principal items in farm-work at this season.

As I cannot discuss more than one subject at a time, I shall, in this paper, take up the subject of ploughing, and I ought to confine myself chiefly to winter ploughing; but as I wish this to be the commencement of a new series of papers on practical agriculture, I shall include (I hope not inappropriately) the whole subject of *Ploughs, Ploughmen, Ploughing and Winter Ploughing*. This is beginning at the beginning. The plough has ever been the fundamental implement of husbandry. It was used in its genuine simplicity in the earliest ages of antiquity. Hesiod describes the Greek plough as consisting of three parts—the share-beam, the draught-pole, and the plough-tail: the share-beam of oak, the other parts of elm or bay, joined firmly with nails: no iron share. The Egyptian plough was something like a large pick: the shaft, held by the ploughman, kept the pick in the soil whilst drawn by the ox. The Romans improved slightly upon these originals, and affixed rude wheels: it had a head, a share, a curved beam, a handle, and draught-pole. These ploughs were incapable of turning the soil, and merely effected a stirring or breaking up: this was all the ancients hoped to attain—a thorough breaking up of the soil. There is no implement in common use that has undergone such a great and marked improvement as the plough. From the manufactories of our plough-makers it comes forth all but perfect. It is manufactured upon the most scientific and truest principles in reference to strength, lightness of draught, and adaptability to every kind of soil or work. It would be superfluous to describe one of our best modern ploughs: all makers now follow the same general form and pattern, so that no farmer need be without good ploughs. He can have the long Archimedean mould-board and large share for his loamy soils—the small hard share and short mould-board for his clays and light and stony soils: he may have wood or iron frames. The wood-frame ploughs are the least costly, and so long as every peg and pin is strong and good the difference in draught is immaterial; but they soon wear and decay: as the wooden frame gives way, the draught increases; the plough strains, and is soon broken up. The iron-frame ploughs are somewhat heavier but that scarcely increases the draught: a twelve-stone man riding on the beam when in work will

not increase the draught above two stone. Their strength and durability are such that they are to be preferred to the wooden-framed ploughs, although at considerably more cost, and as every maker keeps duplicate parts they are readily repaired. Besides these “common ploughs,” there are others made for every kind of plough service—deep ploughing, turnwrest ploughing, trench ploughing—the moulding-plough, the draining-plough, &c. The steam-plough does not come within my province in this paper: it is more an appurtenance to ponderous machinery, and deserves a special paper.

The Ploughman.—In Hesiod's time, it is said, “the most desirable age for a ploughman is forty. He must be well fed, go naked in summer, rise and go to work very early, and have a sort of annual feast, proper rest, good food, and clothing consisting of coats of kid skins, worsted socks, and half-boots of ox hides in winter. He must not let his eye wander about while at the plough, but cut a straight furrow.” By the above extract it will be seen that ploughmen in Job's time (for it is thought that Job and Hesiod were cotemporaries) were no mean men, but of mature age and capability. It is so now: our best men are our best ploughmen. There never was a time when ploughing had reached such a near approach to perfection as the present. Our ploughing matches have achieved great success in this department of farm practice. It is marvellous to see with what precision and uniformity a first-class ploughman will lay his furrows, and all perfectly straight, for many hundreds of yards in length. And these first-class men are to be found on almost every farm. Good ploughing is to be found everywhere. Bad ploughing is quite the exception. There is a general spirit of emulation throughout every class of farm labourers and servants to become good ploughmen. This is mainly owing to the practical working of our numerous agricultural societies. All success to them and their efforts.

Ploughing.—I might find plenty of scope upon this point for a separate paper, but I shall be very brief. Ploughing in its perfection is the foundation of good husbandry. The plough, if properly constructed, should be held upright, so that the furrow-sole have a truly level bottom, and the cutting of share and coulter be even, so that a section of the furrow-slice, be measured where it may, shall be of uniform thickness, and corresponding breadth throughout. The proper angle in which the furrow-slice should be laid is from 40 to 45 degrees, and will depend upon the relative depth and width of furrow. To be strictly correct and in right proportion, the width of the furrow should be twice the depth, *i. e.*, a furrow five inches in depth should be ten inches in width, or a trifle over. Prize ploughmen will scarcely take a furrow so wide in proportion, but then their work looks too closely pressed for the easiest harrowings. A good team, on medium loams, ought to plough rather more than a statute acre per day. To plough a statute acre in furrows of nine inches' width would cause the team to travel rather more than eleven miles, which is by no means a hard day's work. On stiff soils this is a difficulty, but with our best ploughs nicely regulated by wheels it is readily done. Wheel-ploughs with short mouldboards are incomparably the best for heavy and tenacious soils. It is most unbusiness-like and ruinous to yoke four horses to a common plough on a tolerably level country, scarcely to be tolerated on the steepest hill-sides. A good pair-horse team on level ground ought, with a good imple-

ment, to plough well any soil however tenacious, if the soil is in a proper state to be ploughed at all. If strong tenacious clays are hard baked and yet must be broken up, as is often done, it should be by a stronger implement than a common plough.

Winter Ploughing.—This is the seasonable point in my present paper. The first question to be decided is the ultimate purpose for the ploughing, *i. e.*, for fallow or for corn or pulse cropping, or for potatoes, and the like uses. Be this as it may, I at once say that no clay, loam, or medium soil should on any account be ploughed when deeply saturated with wet. If ploughed when partially wetted only, it will take a whole season to effect a good pulverisation. To plough in snow is unpardonable. If stiff clays and strong loams can be ploughed deeply and laid up high and dry, they will derive wonderful benefit from winter frost and atmospheric influences. The main object in winter ploughing with most farmers is the getting on with work; but I would say this is false economy if the land is not in a fit state: it is the summer's work to undo the wrong, even if it can be undone at all. All lands of a strong character ought to be subsoil drained; if so, no great difficulty is in the way of winter

ploughing, merely slight delays, whilst the rains or melted snows are draining off. If the lands are for fallowing, they should be ploughed, as occasion serves, at a considerable depth, and be laid up as conveniently for cross-ploughing as possible. If for a pulse or corn crop, the ploughing should be delayed till near the approaching spring, lest heavy rains should cause the soil to run together, and prevent a good seed-bed: a moderate depth will suffice for these crops; and if the ploughing takes place on lands from which a green crop is fed off, it should be at shallow depth, lest the manure deposits by the sheep should be rendered inactive. If the land is designed for a potato, carrot, cabbage, or like crop, it should be very carefully watched, and only ploughed when in a truly fit state: as these crops must be put in early there is no time for after-working. Land intended for these crops must only be ploughed when in a dry and friable state, *i. e.*, when the furrows will turn up full of cracks and crevices: it must be ploughed from eight to ten inches deep, and be kept dry, or failure is almost certain. Ridge or ribbing ploughing is perhaps the best course for the stiffest and poorest clay soils, but it is not a system adapted for general practice.

THE MANAGEMENT OF FARM FENCES.

This department of our management is chiefly attended to in the season of winter, and is of considerable importance to the cleanliness and neat appearance of the farm, as well as being of real service in keeping up good permanent fences. The vast majority of farm fences consist of hedges of whitethorn. It is chiefly of these that I shall treat. In the fens and marshes of the kingdom the fences mainly consist of ditches of varied depth and width, supplied as best they may with water in several ways—*i. e.*, from the heavens, from the waters from the higher parts of the country, and from the natural soakage from the subsoil. Great attention is paid to the drainage of these districts; so much so, that either by natural or artificial means nearly the whole of the water can be drained off the land. To keep these ditch fences in effective order, it is only necessary to cleanse them out occasionally, and to prevent the water from being wholly drained away, or, as it is technically called, "to hold the water up." The cleansing out for winter is provincially called "roading out." It is the cutting out all the reeds, rushes, and grasses, growing at the bottom and sides of these ditches, which makes the fences look so formidable that stock will avoid them. In the summer when requisite the sides and bottom are cleaned out, and deepened by the spade or "dyking tool."

The Management of Whitethorn Hedges.—I shall here also begin at the beginning. The berry or haw of the whitethorn is exceedingly woody. It requires burial for a considerable time during the winter in some convenient place, and in bulk. In the early spring these haws must be sown upon well-prepared seed-beds, and be nicely raked in. If well attended to, and nicely weeded, a good growth may be obtained, which is called "yearling quick." The well-grown plants of yearling quick is probably the best quick for planting; but two-year-old quick is generally preferred. To produce good two-year-old quick, it is usual to take up the yearling quick from the seed-bed, and transplant it in rows, so as to secure a free and full growth. In this way fine young plants are obtained, and apparently best adapted for safe planting; but experience testifies to good yearling quick being superior. It may be that twice transplanting may retard its growth. For

filling up defective places in the fence, the older quick, even to three years, is preferable, if well rooted.

The preparation of the land or line of fence to be planted is of great moment. It must be thoroughly cleaned, or the young plants will not thrive. The most approved preparation is to dig all over along the line at as great a depth as can fairly be obtained on stony or gravelly soils, and on loams, clays, and light land about eighteen inches deep, and of similar width. This should be done early in the winter. In the open weather in January or February the planting might take place. The proper course is to have a requisite number of men, so that all may be done in order and at once. The trench to be planted should be dug eighteen inches deep; a deposit of about five or six inches of well-rotted fold-yard dung should be spread along the bottom, and be covered five or six inches deep with good well-pulverised loam, slightly trodden down. Upon this bottom the quick should be planted. All broken and superfluous fibres may be cut from the roots. The plants to be set about five inches apart, according to size, and the trench to be filled in with friable loamy earth, all to be trodden firmly down, to be repeated as the manure &c., decomposes. The tops of yearling quick should not be cut off, as is usually done, but left to grow till the third year, when it is right to side it up and lower the top, but in very few cases is it desirable to cut it off close to the ground. It is the common practice also to cut off close to the ground the two and three years old quick, after planting, with the view to thicken the future hedge. It is better to let all grow unmolested one season, and then to order all as the state of the quick indicates. The great thing is to promote the growth of every plant—some plants will far outstrip others—hence the necessity for pruning and ordering aright in the season after planting. If this is neglected the stronger-growing plants will overtop the weaker, and ultimately kill them, thus making gaps. In about the fifth year after planting it is good practice to cut all down, but not all alike. The hedger should distinguish between the strong and the weaker plants. The strong he should cut to the very bottom, but the weaker should be left some inches above ground, so as to give it

advantage in the following spring growth. In this way the hedge will be more uniform and lasting.

In the management of old hedges much will depend upon circumstances. Upon my own farm, for instance, I require a certain length of full-grown hedge for subsoil drainage (mine being a sandy subsoil), consequently several hedges about the farm are permitted to attain a mature growth, and kept sided up; but where hedges are not required for this or other purposes, such as shelters for grazing fields and the like, it is far better to keep all down, and as low as is consistent with a good fence, not only for sheep, but cattle. This I think would necessitate a medium height of three to four feet, provided a ditch ran alongside, but of four to five feet if the hedge alone formed the fence, and then in proportion to the strength and thickness of the hedge. There are many courses pursued in the management of these old hedges. *Plashing* I will take first. The best way is to cut up the whole hedge when it has attained such a strong growth as to afford sufficient wood to make good stakes. Every stem must be cut upwards, *i. e.*, the chop with the hedging tool must be with an upward stroke, so that the cut is so slanting as not to hold water, and close to the ground. The stakes to be nicely trimmed, sharpened and driven in the ground about fifteen inches from the "old stools", and about two feet apart. The brushwood (small twigs) should be first laid along the bottom from stake to stake, the brush bearing from the stools. Next the strongest and longest boughs or layers, well prepared, should be firmly entwined in the stakes, the longer the better, as more binding, to be followed by sufficient layers, well and firmly pressed together, according to the required strength of the hedge, and finally topped by picked layers well trimmed to bind the whole, as one strong continuous hedge. In many cases this mode cannot safely be adopted, and it is necessary to tie the dead and living hedge together; in such case the larger layers must not be severed from the stool, but just so much cut as will enable them to be freely bent so as to be readily laid along, and be entertained in the stakes. In other cases it is even requisite to leave the stakes uncut, and thus lay the layers along, and almost upon the cut stools. This is detrimental to their growth, and should only be adopted in cases of real necessity. When all is laid the hedger should go over the whole length, and nicely trim up the layers, and take the tops of the stakes off to a uniform height.

Back-heading.—This is done by simply cutting off the top to the required height, and partially siding the upper branches, so as to narrow the top. All spreading branches are also cut off.

Siding-up.—This is done by simply cutting, with the chop upwards, the hedge on both sides to a narrow top, so as to make it what is technically called "hog-maned"—*i. e.*, broad bottom, narrow top. There is another and, in many cases where the field is stocked, a better way of siding-up. That is, to side-up only one side at a time, and in a year or two to side-up the other. This secures a better fence at less cost, as the brush on the side uncut forms a guard and fence.

Bottoming.—This is merely cutting up the whole hedge at the very bottom, taking care not to split any of the stools, so that wet shall get in and destroy the roots, and, as before said, to leave every stool with an upward cut, to facilitate the shooting off of rain.

It adds greatly to the favourable appearance of the farm when the hedges are nicely ordered and "kept under the hook," or trained. There are several ways of doing this. I think the best form for ordinary permanent hedge is to train it so that the bottom shall have a breadth of from 2½ feet to 3 feet, and taper up to nothing at top, at the

height of 3 to 3½ feet. This is the true "hog-maned hedge." If a larger hedge is necessary, the proportions might be extended. A hedge of this kind, if nicely cut twice a-year, will soon become one compact outline through which a bird can hardly find entrance. The next I would recommend for the trained hedge is to keep the sides perpendicular, and the top "hog-maned," narrow at top. This should also be trimmed twice a-year, or it will get beyond its training. Another kind of trained hedge is the oval top and flat sides. This looks very well if nicely trimmed, but is injurious to the roots. Many hedges around gardens and the like look exceedingly well if kept in good order as above, although allowed to run up from 10 to 15 feet. There are a few fences to be found from planting beech—beech hedges; but I have never seen one to compare with white thorn: black thorn is often found, but it is no better as a fence. One great means of keeping hedges in order is by the prevention of weeds or grass from growing up into them. This requires constant attention. It is surprising how soon they become infested. Bindweed and other trailers are very injurious. In very hilly and mountainous districts the fences are chiefly made of stone, often admirably built into long lines of high fences or walls. The winter season is the very time to attend to these fences, as no mortar is required. In the past few years a new practice has arisen—*i. e.*, to construct farm fences of rod or flat bar iron and iron stakes, or iron wire and wood posts. Both modes of fencing are very serviceable, but expensive. They are well adapted for railway fencing, where they are under continuous supervision, and for ornamental frontages as an invisible fence.

THE CHAMBER OF AGRICULTURE AND THE LANDLORDS.

A little thought on the subject would, we think, convince the Council that something more is wanting to give the Chamber a position of importance in the county, commensurate with its merits and its power of usefulness. There are many topics which it would be desirable to ventilate prior to their formal discussion in a general meeting of the County Chamber of Agriculture. We are somewhat inclined to give weight to the arguments which are given in our agricultural column, that in preliminary discussion—at all events on some subjects—farmers should have an opportunity given them of examining and discussing the merits of a question in all its detail, and from various points of view. It is obvious, as the *Mark Lane Express* points out, that there are questions which cannot be freely debated in the presence of the landlords. There are such questions as the preservation of game, the length of leases, rotation of cropping, and minor regulations of tenure, which require a firm outspoken expression of opinion, which is scarcely possible by those unused to public speaking, under the eye of their landlord or his agent. To give this opportunity of free discussion, farmers' clubs are necessary. They are easily established. The number of members is no material object. They can commence as easily with half a dozen members as with half a hundred. The reading and writing of a paper on any subject bearing on the interests of agriculture cannot fail to give a conciseness to the thought and a power of expression which can be used when needed to defend the truth or to advance opinion. The free and easy mode in which the discussion takes place tends to place every one at his ease, and the result is apparent when the farmers are asked to give their opinion on such questions as engaged the attention of the Chamber yesterday. The want of this preliminary training and practice has been apparent in every meeting of the Chamber which has yet been held. Let, then, the Chamber be the Senate, but let it be fed and supported by the establishment of farmers' clubs in every market town in the county.—*The Royal Leamington Spa Courier.*

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

HALF-YEARLY GENERAL MEETING.

The half-yearly general meeting of this society was held in Edinburgh. In the absence of the president and vice-presidents, the Marquis of Tweeddale, K.T., one of the former vice-presidents, took the chair.

The CHAIRMAN said he regretted very much that he was obliged to bring under the notice of the meeting the death of their late lamented friend, Sir George Clerk, Bart., who had been so long a faithful servant of the Highland Society, as well as a very active member in everything connected with agriculture. (Applause.)

The SECRETARY then read the following draft minute, which it was agreed to include in the records of the society:—"Before proceeding to the business of the day the directors resolved to record in their minutes the deep regret with which they regard the death of the Right Hon. Sir George Clerk, of Penicuik, Bart., and to express their sense of the valuable assistance which the society had for many years received from him as Honorary Secretary, and a member of the Council on Agricultural Education."

On the motion of the noble Chairman, Sir William Stirling-Maxwell, of Keir, was appointed to succeed the late Sir George Clerk as Honorary Secretary and a member of Council on Agricultural Education.

In conformity with the recommendation of the directors his Grace the Duke of Buccleuch and Queensberry, K.G., was then unanimously elected president of the society, being his third year in office; and the Earl of Fife, Earl of Southesk, and Earl of Kintore, were elected vice-presidents in room of the Earl of Glasgow, Lord Belhaven, and Lord Blantyre.

ESTABLISHMENT FOR 1868.

President: His Grace the Duke of Buccleuch and Queensberry, K.G.

Vice Presidents: The Earl of Dalhousie, K.T.; the Earl of Fife, K.T.; the Earl of Southesk; the Earl of Kintore.

Extraordinary Directors: Sir Michael R. Shaw Stewart, Bart.; Sir James Fergusson, Bart., M.P.; Sir Walter Elliot, of Wolfleele, K.S.I.; Archibald A. Spiers, of Elderslie, M.P.; Sir James Horn Burnett, Bart.; Sir Alexander Bannerman, Bart.; John Gordon, of Cluny; Alexander Forbes Irvine, of Drum; Lieut.-Colonel M'Inroy, of The Burn; Alexander Morison, of Bognie.

Ordinary Directors.—Sir Alexander C. Ramsay Gibson-Maitland, Bart.; George Robertson Barclay of Keavil; John Dudgeon, Almondhill; Robert Dundas of Arniston; William Goodlet, Bolsham; James Robertson, Ladyrig; John Stirling of Kippendavie; Archibald Campbell Swinton of Kimmerghame; William Stuart Walker of Bowland; Sir Thomas Buchan Hepburn, Bart.; William Wallace Hozier yr., of Mauldshe; Colonel William Mure of Caldwell; Thomas Park, Stoneyhill; Walter Reid, Drem; Graham Somervell of Sorn; Graham Binny, W.S., Edinburgh; Colonel Archibald Campbell yr., of Blythwood; Colonel Joseph Dundas of Carron Hall; Robert Elliot, Leighwood; James Geddes, Orbliston; John Ord of Muirhoselaw; Major John Ramsay of Barra; Robert Russell, Palmuir; Sir James Gardiner Baird of Saughton Hall, Bart.; Hew Crichton, S.S.C., Edinburgh; Charles Lawson of Borthwick Hall; Alexander M'Dougal, Granton Mains; Thomas Mylne, Niddrie Mains; Thomas Coutts Trotter, Bilston Lodge; John Wilson, Edington Mains.

Office-Bearers.—Sir William Stirling-Maxwell of Keir, Bart., M.P., Hon. Secretary; the Right Hon. Sir William Gibson-Craig of Riccarton, Bart., Treasurer; Fletcher Norton Menzies, Secretary; Rev. James Grant, D.C.L., D.D., Chaplain; Thomas Anderson, M.D., Professor of Chemistry, University of Glasgow, Chemist; Kenneth Mackenzie, C.A., Auditor; John Wilson, Professor of Agriculture, University of Edinburgh, Professor of Agriculture; W. J. Macquorn Rankine, LL.D., Professor of Civil Engineering, University of Glasgow, Consulting Engineer; Alexander Slight, Practical Engineer; Gourlay Steell, R.S.A., Animal Portrait Painter; William Williams, Professor of Veterinary Surgery; John Adam M'Bride, Professor of Cattle Pathology; Thomas Dun-

can, Clerk; John M'Diarmid, Junior Clerk; William Blackwood and Sons, Publishers; Neill and Company, Printer; Mackay, Cunningham, and Co., Silversmiths; Alexander Kirkwood and Son, Medallists; John Watherston and Sons, Inspectors of Works; William M'Neill, Messenger.

Chairmen of Standing Committees.—Argyll Naval Fund, Admiral Sir William J. Hope Johnstone, K.C.B.; Chemistry, Professor Anderson; Cottages, Harry Maxwell Inglis of Logan Bank; District Shows, A. Campbell Swinton of Kimmerghame; Finance, Anthony Murray of Dollerie; General Shows, Alexander Kinloch, jr. of Gilmerton; House and Buildings, John Ord Mackenzie of Dolphinton; Machinery, John Gibson, Woolmet; Premiums for Reports on the Science and Practice of Agriculture, Professor Lyon Playfair, C.B.; Premiums for Reports on Woods and Plantations, Professor Balfour; Publications, Alexander Forbes Irvine of Drum; Veterinary College Examinations, Andrew Gillon of Wallhouse.

Mr. HARVEY (Whittingham Mains) said a good deal of dissatisfaction existed respecting the appointment of the general committee. He would like to know who the gentlemen were composing it. The Society did not appoint the committee, but it fell into the hands of the directors to do so, and at last Glasgow Show there had been great dissatisfaction with the judges, particularly of blackfaced and other breeds of sheep. The board of directors included many practical men, but there was also a good number of ornamental directors, who knew little about practical agriculture or about blackfaced or other sheep. He wished to throw a little more popularity into the committee, and though he knew it was impossible to appoint judges who would please everyone, yet certainly he thought more practical men might be appointed.

Mr. MENZIES read the names of the gentlemen constituting the show committee.

Mr. KINLOCH remarked that the list included a good many practical men.

Mr. HARVEY admitted that it did, but he had not known before who they were.

Mr. HUNTER (Blackness) thought the system of electing directors in a lot ought not to be followed, but that every member should be named and seconded. The public would thus have opportunity of knowing whether the person proposed was fit to be a director or not. He had no doubt if the name of a gentleman tenant-farmer who had gained high and great honours in the sister-country were proposed—that the name of Mr. M'Combie, Tillyfour, would do credit to the directorate if he were elected. But if Mr. M'Combie were proposed now, he would not have a chance of being elected; but if Mr. M'Combie's name were proposed and seconded along with others, he would like to see the name that would stand higher. He (Mr. Hunter) was altogether opposed to the system of a close list, and if some other system was not adopted they would have more of the noise that they had in the Society some time ago. The matter was one worthy of the attention of the Society and of the directors.

Fifty-five gentlemen were balloted for and elected members. Sir WILLIAM GIBSON-CRAIG laid on the table the accounts for 1866-7, with printed abstracts, as already published.

Sir WILLIAM HOPE JOHNSTONE submitted the accounts of the Argyll Naval Fund for 1866, which have likewise been published.

On the motion of Mr. MURRAY, the bye-law in regard to execution of deeds was confirmed. It is as follows:

"That in the absence of the Treasurer and Honorary Secretary, the Acting Secretary for the time being shall be empowered to subscribe, in the manner set forth in the Charter, all dispositions or other deeds granted by the Society."

Mr. KINLOCH, of Gilmerton, reported, in regard to the Glasgow show, that the show had been a complete success. It was true, the interest in some of the classes was not so great as was to be expected; but, taken as a whole, the quality of stock had never been excelled. Mr. Kinloch also paid a high compliment to Mr. Menzies, the secretary, for the courtesy

and attention he had uniformly exercised during the show, and stated further that Mr. Menzies had noted many things which he considered might be favourably altered in the management of the yards. He (Mr. Kinloch) would not follow Mr. Harvey into his remarks, but he might state that the judges were appointed by the directors, and not by a committee. The directors would give attention to every well-considered scheme submitted to them on this point, but he thought it would take a very strong case to induce them to depart from the recommendation of the committee approved of in 1860. Mr. Kinloch concluded by moving several votes of thanks.

Mr. KINLOCH reported, with regard to the arrangements for the Aberdeen Show, that the exhibition would take place on the 25th, 29th, and 30th of July, which was earlier than usual; but they had fixed upon these days in order not to interfere with the shows of the Royal English Society and of the Yorkshire Society. He further mentioned that the directors had agreed to a request forwarded to them, that the show of 1869 should be held at Edinburgh, and they had remitted to the show-committee to draw up a list of premiums.

Mr. CAMPBELL SWINTON, of Kimmerrhame, chairman of the committee on district shows, laid on the table the report of the committee, from which it appears that during last year 220 competitions of various kinds had taken place, namely, stock 22; minor premiums and medals, 50; ploughing competitions, 149. The society has besides contributed to the funds of the Dundee Show and the Edinburgh Christmas Club, making a total expenditure of £705. Mr. Swinton then moved that the sum of £800 be voted for premiums during 1868. The grants the directors propose are distributed over the whole of Scotland, and comprise at least as many districts as in 1867. The motion was agreed to. He then gave a lengthy report from the special committee on the endowment of the Chair of Agriculture, which, after detailing the steps which had been taken with that view, stated that, "the committee having satisfied themselves that there is a moderate surplus of funds, and being of opinion that even if the measure should involve the necessity of some retrenchment in other departments, the Chair of Agriculture has a strong claim to aid from the society, beg to recommend that an annual grant of £150 should be voted for ten years, on condition that Government gives the same or a greater amount; although a temporary rather than a permanent grant is proposed in the first instance, it would, of course, be understood that the grant from both sources would be continued if the Chair, on its new footing, proved successful."

A report was also presented from Dr. Playfair and Dr. Balfour on the subject, approving of the course proposed by the directors.

The proposal was unanimously adopted, and the directors were authorized to make, in concert with the Senatus Academicus, the necessary application to Government.

The motion was then put from the chair, and unanimously adopted by the meeting.

Mr. GILLON, of Wallhouse, reported on the proceedings which had been taken by the committee on a Charter for the Veterinary College of Scotland. Since the general meeting in June a draft of a Veterinary Charter had been prepared and forwarded to the principal Secretary of State for the Home Department, by whom it had been referred to the President of the Board of Trade. By desire of the directors, a communication, accompanied by a copy of the Society's memorial, had been sent to the convener of every county in Scotland, and it was believed that, with one or two exceptions, all the counties had adopted memorials in favour of a Veterinary Charter for Scotland. A very influential deputation, consisting of six Peers, nearly all the Scotch members of Parliament then in London, the Lord Provost of Edinburgh, a number of leading veterinarians holding the society's diploma, besides several other gentlemen, waited, according to appointment, on the Duke of Richmond, the President of the Board of Trade, on the subject. The object of the deputation had been fully stated by the Lord Provost on behalf of the Corporation of Edinburgh, and by Mr. Campbell Swinton on the part of the Highland Society. The deputation had been very much indebted to Lord Colonsay, who explained that, on a proper construction of the Charter of the English College, monopoly was not to be inferred. The Duke of Richmond stated the subject would receive his best consideration; but he reserved his decision till he heard the case of the Royal College of Veterinary Surgeons,

a deputation from which was to wait on him on the 28th of November. At a recent meeting of the Veterinary Committee of the Highland Society, it was agreed, after consulting the Town Council Veterinary Committee, that the Trustees to be named in the proposed charter should stand as follows:

Three persons to be elected by the Highland Society	...	3
Lord Provost of Edinburgh and one person	...	2
Lord Provost of Glasgow and one person	...	2
One person to be elected by the University of Edinburgh	...	1
One person to be elected by the University of Glasgow	...	1
One person to be elected by the University of Aberdeen	...	1
One person to be elected by the University of St. Andrews	...	1
One person to be elected by the College of Physicians of Edinburgh	...	1
One person to be elected by the College of Surgeons of Edinburgh	...	1

Veterinary surgeons to be elected	...	10
Principals of Edinburgh and Glasgow Veterinary College	...	2
		— 12

The draft charter is in course of being recast.

Dr. DALZELL, of the Veterinary College, Clyde-street thought it only respectful to this society, and in accordance with the wish of the whole veterinary profession in Scotland, that he should return their thanks for the interest the society had taken in this matter. Strenuous exertions had been made in England to defeat the object of obtaining a charter for the Veterinary College of Scotland. Among the last and most successful means which had been tried was this, that on seeing the draft charter, persons connected with the Board of Trade and English members of Parliament, said that this veterinary charter hardly provided for any representation of the veterinary profession. And it was understood not to be the intention of Government to give a charter, unless the veterinary profession was represented. A meeting of veterinarians was accordingly called by public circulars, and held in 5, St. Andrew-square, at which upwards of one hundred veterinarians were represented. It was put on him (Dr. Dalzell) to take action, and had the benefit of the assistance of Mr. Robinson of Greenock. He was glad to say that now upwards of 238 signatures had been obtained to the memorial praying for a Scotch charter. About 70 of the signatures were obtained in England and Ireland; but still as it was estimated that the number of veterinarians in Scotland was 280, they had obtained the signatures of upwards of two-thirds of the veterinary profession.

Professor ANDERSON reported his proceedings in the chemical department. He stated that the work done for the society had been under the average, although a considerable amount of heavy practical work had been accomplished. He had advanced some distance in his investigation into the different substances used for smearing and dipping sheep; but there was a great deal of matter to be accumulated before he would venture to lay his results before the society. The general work of the department now included the supervision of the field experiments, and this involved a great deal more work than he had at all anticipated.

Mr. IRVINE, of Drum, reported that since the general meeting, in June last, the following premiums had been awarded:

1. £30 to the Rev. John Gillespie, A.M., Mouswald Manse, Dumfriesshire, for a report on the agriculture of Dumfriesshire.
2. The silver medal, to the author of a report on the same subject, bearing the motto, "Ubique Patriano reminisci."
3. £10, or the gold medal, to Robert E. Browne, agent to Major Stapylton, Wass, Oswaldkirk, Yorkshire, for a report on the formation and management of young plantations.
4. The silver medal, to the author of a report on the same subject, bearing the motto, "I hope to speed."
5. £20, to Christopher Young Michie, forester, Cullen House, Banffshire, for a report on larch forests in Scotland.
6. £5, or medium gold medal, to Christopher Young Michie, forester, Cullen House, for a report on trees not liable to be destroyed by rabbits.
7. The silver medal, to the author of a report on the same subject, with the motto, "Memor Eto."
8. £5, or medium gold medal, to Robert Hutchison, of

Carlownie, Kirkliston, for a report on pruning the rarer conifers.

Mr. IRVINE also announced that the following premiums will be offered in 1868, and stated that there are attached to each special conditions which must be strictly observed. These conditions, and the dates at which the different reports must be lodged, will be found in the Premium Book for the current year, copies of which may be had on application to the Secretary about the middle of February:—

I. ON SUBJECTS CONNECTED WITH THE SCIENCE AND PRACTICE OF AGRICULTURE:—

1. Agriculture of Aberdeenshire and Banffshire	£30
2. Agriculture of East-Lothian	30
3. Manures produced by different kinds of feeding	20
4. Manures made with and without cover	20
5. On applying Manure to the stubble in Autumn, or to the Drills in Spring	20
6. Improved Varieties of Agricultural Plants	10
7. Comparative productiveness, &c., of Potatoes	10
8. Comparative productiveness, &c., of Turnips	10
9. Cultivation of Cabbage as a field crop	10
10. Vegetable productions of India, China, America, &c.	10
11. Best modes of Housing Fattening Cattle	20
12. Different descriptions of Food for Stock	20
13. The duties of the Veterinary Surgeon in the examination of Horses as to soundness	5
14. Pleuro-pneumonia	10
15. Disinfecting agents, especially sulphuric acid and carbolic acid, for preventing attacks of Cattle Plague	10
16. Sanitary arrangements for Stock	10
17. Transit of Stock by Railway, Sea, and Road	10
18. Dipping, Pouring, and Smearing Sheep	20
19. Profitable extension of the Poultry Department in a mixed Farm in Scotland	5
20. Rural economy abroad susceptible of being introduced into Scotland	10
	— 290

II. LAND IMPROVEMENTS:—

1. General Improvement of Estates by Proprietors	10
2. Reclamation of Waste Land by Tillage, by Proprietors or Tenants, £10, £5, and Silver Medal	15
3. Improvement of Natural Pasture without Tillage, £10, and Silver Medal	10
	— 35

III. AGRICULTURAL MACHINERY:—

Invention or Improvement of Implements of Husbandry	50
	— 50

IV. WOODS AND PLANTATIONS:—

1. Extensive Planting, by Proprietors	10
2. Formation and Management of Young Plantations	10
3. General Management of Older Plantations	10
4. Planting on Exposed or on Barren Tracks	10
5. Value for Economical Purposes of the Corsican Fir	5
6. American and Canadian Forest Trees	5
7. Forest Trees of Recent Introduction	5
8. Uses to which Roots of Conifers may be applied	5
	— 60
	£435

TRANSACTIONS FOR 1868.

Mr. IRVINE, of Drum, Chairman of the Committee on Publications, reported that the Transactions for 1868 would be published in February. The usual preliminary notice will be superseded, as the Directors have resolved to include in the

Transactions the proceedings at the half-yearly general meetings as well as an abstract of the business at the Board meetings. In arranging the order of publication, provision has been made for the separation of the prize reports from the premium lists and other official documents. All reports of experiments will in future be brought out, if possible, within a year of the award; the Directors having with this view extended the Transactions to twenty-two sheets of sixteen pages, in place of between eighteen and twenty sheets. Estimates for printing the Transactions were taken in June last, and the tender of Messrs. Neill and Co., of Edinburgh, was accepted. Messrs. William Blackwood and Sons, Edinburgh, have again been named publishers, and non-members will be supplied with copies on application to them. The papers in next number will appear in the following order:—

CONTENTS OF No. 3.—FOURTH SERIES.—*I. Prize Reports*—1. Diets of Scotch Agricultural Labourers. 2. Foot-Rot in Sheep. 3. Shirreff's Bearded White Wheat. 4. Pruning Forest Trees. 5. Different Descriptions of Food for Stock. 6. Different Toppings on Ryegrass and Clover, Turnips, and Wheat. 7. Field Experiments on the Action of an Equal Money Value of different Toppings on Wheat, Grass, and Cabbage. 8. Turnips for Seed. 9. Hedgerow Trees. 10. Comparative Productiveness of Turnips. 11. Experiments on Oats with two different Manures. 12. Management and Value of Poplar. 13. Phosphatic and Ammoniacal Manures. 14. Cultivation of Mangold Wurzel. 15. The Agriculture of Perthshire. *II. Proceedings of the Chemical Department*—1. Analyses of the Soils on which the Field Experiments of 1866 were made. 2. Report on the Field Experiments of 1867. *III. Proceedings of the Society*—Embracing Reports of General and Board Meetings, Premiums Awarded in 1867, and Offered in 1868, Returns of Seed and Ploughing Competition, and Abstracts of Accounts.

Mr. ELLIOT said they had given premiums for reports, and for bringing forward to the public what each individual believed were experiments of great value and importance. Whether it was true or was not true that some of these reports had not been published, he did not know; but he asked Mr. Menzies, and he had no doubt he would be able to answer him, and clear the Society of any imputations that had been thrown upon it by the statement that some of these had been locked up in the chest of the Society for ever. When the Society gave money it was for the benefit of the public and the good of the community, and that it was not given where these were never seen or heard of. Various publications, however, had made statements of this kind that he wished to have explained.

Mr. IRVINE said that some papers had been left over for want of space, and there might be some essays which had not been published; for though the society had granted premiums for them, they did not think the subject matter of them was of so much public importance as to necessitate their publication. Only about £25 had been given in the course of twenty-five years. That explanation he had no doubt would be perfectly satisfactory.

The report was agreed to.

Mr. WALDEGRAVE-LESLIE said there had been great ignorance displayed as to the wants of Scotland under the Cottage, &c., Improvement Acts, and the consequence was that there had been a total cessation of demands for money under these Acts. He had spoken to the Lord Advocate on the question, and though his lordship had committed himself to nothing, he had spoken favourably upon the subject. The resolution he had to submit was as follows:

"That, inasmuch as the system of supervision of drainage and land improvements by local inspectors in Scotland under the authority of the Government Inclosure Commissioners has been found to work in a satisfactory manner, it is the opinion of the Highland and Agricultural Society of Scotland that a like system of supervision as regards the plans and erection of farm-buildings and cottages, under Improvement Acts, be entrusted to the supervision of an architect in Scotland, to act under the authority of the Government Inclosure Commissioners; and that the Right Honourable the Lord Advocate be furnished with a copy of the above resolution, and be requested to do his utmost to carry it into effect."

Mr. M'LAGAN, M.P., seconded the motion. He said he had had the honour of being a director of the Cottage Association, and brought the subject before the meeting some time ago. The cottages which it was insisted should be built in Scotland

were similar to those in England, and differed so materially from those required in Scotland that it was found absurd to erect cottages which would be very good for England, but were useless for Scotland. He was most happy to second the motion, and he would do all he could to support Mr. Waldegrave-

Leslie here and in another place, if he brought it forward in the form of a bill.

The resolution was unanimously carried.

On the motion of Mr. M'LAGAN, a vote of thanks was given to the chairman, and the proceedings terminated.

STEAM CULTIVATION IN HAMPSHIRE.

The monthly meeting of the Botley and South Hants Farmers' Club was held at the Dolphin Inn, Botley; Mr. C. H. Gater, president, occupying the chair. The subject set down for discussion was "Steam Cultivation as adapted to this locality," to be introduced by Mr. JOHN C. SUTTON, of Shirley.

The PRESIDENT said he had to introduce to them one who, though almost a stranger, was entitled to speak on the subject with considerable authority, having resided in Bedfordshire for many years, and being closely connected with a celebrated firm (Howard's), which had done much in the way of manufacturing improved implements for agriculture, and the merits of which had been frequently tested at exhibitions and other occasions.

Mr. SUTTON said: The steam thrashing-machine's merits being fully known and appreciated in the agricultural world, let us now look with what success this mighty power has been applied to the cultivation of land. The first attempt appears to have been made as far back as 1618, was revived in 1634, and at various periods attempts of a more or less important character have been made up to 1854. Those who care to read the history of these inventions will find full details in a valuable paper written by Mr. James Howard and read before the London Farmers' Club in 1862. I had prepared with some trouble full particulars of the working details of early patents, but feeling that you would desire to treat the matter in its present practical form, rather than in an historical manner, I have refrained from bringing it forward. We find in 1854 the late Mr. John Fowler exhibiting his steam draining-plough at the Royal Society's meetings, and in the *Journal* of that society I find a remark to this effect: "Surely this power can be applied to more general purposes, and we earnestly commend the idea to our engineers and mechanics." Thus, we shall see, has not been lost sight of by them. Amongst those who have taken up the subject practically, I may enumerate Mr. John Fowler, Messrs. J. and F. Howard, and Mr. Boydell, of traction-engine celebrity (whose engine, doubtless you will recollect, was exhibited at Salisbury in 1857); Mr. Romaine, who invented an engine to travel over the land and dragging an implement after it; Mr. Halkett, who laid out lines of railway on brick foundations throughout the farm for engines to travel upon; his design was to cultivate the land, cart on manure, and harvest the crops by steam—rather an expensive process, costing more than the fee-simple of the land. Then follow Tucker, Robey, Hayes, Yarrow, and Hilditch, whose engines are now manufactured by Coleman and Morton, of Chelmsford; Messrs. Savory and Sons, who practically revived the system of double-engines; but the most popular of all these and truly successful are those of Fowler and Howard. I wish you to understand that I am not here to advocate any particular system, as from my former career you might be led to suppose, but my object now is simply to direct your attention to the merits of steam cultivation, as a general proposition, leaving you to judge which system is most applicable to your different requirements. To simplify the treatment of the subject I will only allude to the systems of Messrs. Fowler and Messrs. Howard, but I must, in passing, pay a tribute to Mr. Smith, of Woolston, who acted upon the advice given by the judges in 1854, immediately proceeded with his system, and must be proclaimed the first farmer who succeeded in adapting steam cultivation profitably, and that on a small clay farm, to the culture of the soil. System No. 1, Fowler and Co.—This tackle consists of self-working engine, with clip-drum windlass, travelling anchor, 800 yards of steel-rope. Plan of working: On the left headland is the engine, and directly opposite to it the anchor; both move gradually forward along the headlands; between them the plough or other instrument is pulled backwards and forwards. The implements are connected with slack gear, which lengthens or shortens the rope

as the boundary of the fields may require, System No. 2, Fowler and Co.—This tackle consists of two self-moving engines, with winding drums. Plan of working: Two winding engines are worked on opposite headlands, and each alternately draws the implement towards itself, the engine not at work paying out the rope while moving forward into position for the return bout. Messrs. Fowler have now the means of working two implements at one time. Messrs. Howard's System No. 1 consists of two traction engines with a winding barrel to each, working along opposite headlands, and drawing a single plough, cultivator, or harrows from one engine to the other alternately. System No. 2.—This is termed a double double system, first applied by Messrs. Howard. This consists of two engines similar to the foregoing, but each fitted with two winding drums, so that two ploughs or two other instruments can be drawn simultaneously, and thus both engines are kept constantly at work. Either one of these engines can be used to form the roundabout system. System No. 3 is that now so well known as the roundabout. Consists of a separate windlass, which can be worked by an ordinary portable or self-propelling engine of eight, ten, or twelve-horse power. The double-engine system is best adapted for public companies, very large occupiers, and persons who purchase machinery for hire. The latter system is best adapted to farms of 300 to 500 acres; and being already in the hands of some hundreds of practical farmers, can be seen in nearly every county in England. In the autumn of 1866 the Royal Agricultural Society of England, at considerable expense, sent out three commissions of inquiry to visit the several farms upon which steam had been employed. Mr. Sutton then quoted the report of the Commissioners to the Royal Agricultural Society, and then proceeded to lay before them examples of the working of these two celebrated makers' (Fowler and Howard) apparatus on both light and heavy land, which can be corroborated by some 135 others. Example No. 1, Howard's apparatus.—Mr. John Horrell Stevington, Bedford (who succeeded Mr. Pike, who here began steam cultivation in the year 1857), purchased his apparatus second-hand in 1863, Clayton and Shuttleworth's ten-horse engine and Howard's tackle. The farm consists of 457 acres, 307 arable and 150 grass, the soil a stiff stubborn clay, the subsoil blue gault. The cost, exclusive of wear and tear, is 6s. 6d. per acre, including removals, and allowing 1s. 6d. per acre for wear of rope and for general repairs and wearing parts, makes a total of 8s. 15 horses were originally employed on this farm; the work is now done by 10. The allowance for wear and tear is liberal, this perhaps being some of the most difficult land in the kingdom to work. Example No. 2, Fowler's apparatus.—On a farm of 450 acres in Wilts, with a large extent of pasture, with stiff solid clay. Used to take 3 horses to plough a furrow 3 inches deep, and an extra horse 4 inches deep. Cost per acre, 7s. 10d. This includes labour, wear and tear, interest, and depreciation. Grows much better wheat and green crops since the introduction of steam, and estimates a saving of 12 horses. Example No. 3, Fowler's.—On a farm of light land at Lampport, Sussex, in the occupation of Mr. Ellman, a celebrated sheep breeder, cultivated area 500 acres; marl upon chalk. Can be worked by 2 horses when thoroughly dry. Cost per acre for ploughing, including wear and tear, maintenance, and depreciation, 8s. 7d.; cultivating 6s. 6d. per acre. Saves 20 oxen and 2 horses (12 horses), whilst all the operations of the farm have been quickened. Examples No. 4, Howard's.—On light land, farmed by Mr. Greene, M.P., Bury; 12 horse-power traction engine and Howard's tackle; 400 acres, friable loam on chalky subsoil; farm requires no drainage. The cost is 4s. 11d. per acre, including interest, and 1s. 6d. per acre for wear and tear, making 6s. 5d. per acre. Horses reduced from

ten to six. In harvest time two horses are purchased to assist in carting, which are sold immediately afterwards. I will now read you a communication with which I have been kindly favoured from a farmer well-known to all of us, Mr. A. Fletcher, Fovant, near Salisbury, whose judgment and experience are worthy of notice. Mr. Sutton then read the letter, in which Mr. Fletcher observed: "I began using steam tackle in the autumn of 1880. My engine is a 10-horse power double cylinder, of Clayton and Shuttleworth's. The tackle is manufactured by Howard. The number of acres I have cultivated is between 2,000 and 3,000, and the horses I employ are ten less than when I commenced using the apparatus. The cost per acre for ploughing is 10s. on heavy land that would take three horses to plough half an acre per day; on light land about 7s.; cultivating costs 5s. per acre. I cultivate and plough 300 to 400 acres every year, and find the heavy land that was deeply cultivated at the commencement of my using steam is very much drier, and after heavy rains we do not get water to lie on the surface as it did before. My system is using the cultivator is to do it twice, the first time about six inches, and the second time from nine to 12 inches, or as deep as your tackle and land will admit. I am satisfied that no horse power can compete with steam cultivating for cheapness and good management." At the time these reports were made there had been but little experience with the double-engine systems, but from inquiries I have since made the cost of working by this means is from 20 to 25 per cent. less. At Bury St. Edmunds, last year, both Messrs. Fowler and Messrs. Howard worked this system, when the average work performed per diem was 30 acres. Having given you examples of the working expenses on both light and heavy land, I think we may conclude that it is available for this district, to prove which is the object of the present paper. These examples, and the letter from Mr. Fletcher, show the comparative cost of horse and steam labour, and the greater economy of the latter. I further claim for steam cultivation the following advantages: A much greater amount of work can be performed per diem than by horses, which, being done immediately after harvest, is of so much more value than when done slowly, and without the influence of a powerful sun; thus not only destroying weeds and twitch, but more thoroughly fertilising the land. Then you have no poaching of the land by horses' feet, the land lies drier and sounder, the natural drainage is improved and the intention of artificial drainage rendered perfect—increased of corn crops and roots, diminution in the number of horses, the hard work of the farm being done by steam enabling the farmer to maintain the horses he is compelled to let remain at a much cheaper cost. Engineers have done their part, having at a great cost rendered their implements efficient. To assist in this matter, landlords should put their shoulders to the wheel, small enclosures must be enlarged by the grubbing up of hedges and removal of solitary trees; the underdraining of heavy lands must be carried out with liberal covenants and long leases. I may here state that on the Britannia farms, of 604 acres, ten acres of land have replaced ten miles of hedgerows. This land is now growing luxuriant crops, which before only harboured vermin. On a farm in Herts, there were 16 acres of land recovered in the same way at an expense of £155 12s.; the wood produced £42 per acre. Mr. Sutton then referred to the question of expense attending the introduction of steam cultivation. The introduction of the larger tackle, he remarked, may be facilitated by two or three farmers joining in the speculation, or by companies being formed to let the apparatus on hire. Should any well-devised scheme be set afloat for introducing steam cultivation in that locality, he would be willing to take shares in the same, and give the managers the benefit of his experience. He had in this brief paper studiously avoided giving too many statistics, but trusted that in the discussion which would follow some practical opinions on this important subject may be elicited.

The PRESIDENT said: Even in that locality, where such a thing had been scarcely entertained before, they must be convinced, he thought, that such a system of cultivation would be attended with benefit. To use a figure of speech, they must begin to think of discarding the old flint musket for the new breech-loader. He saw several gentlemen present who had tried steam cultivation, and hoped they would state their experience of it. The great injury to farming by hedge-rows and timber growing therein had been fully shown in a discus-

sion which took place at their club about four or five years ago; he believed that the amount of injury which agriculture had suffered from that source during the past century was incalculable.

Mr. ROSLING, who had tried steam cultivation on his farm, said it was quite necessary to remove hedges and such like as the preliminary step, as they could not carry out the new system with small enclosures. Its great advantage was, that they got their work done when it was most wanted—just after harvest. It enabled them to diminish the number of horses to a very large extent; and altogether he had found steam cultivation to be of great advantage.

Mr. REEVES said, having adopted steam cultivation on their farm about four years ago, they were perfectly satisfied with the results derived from it. The work was done much more effectually, and quite as cheaply as before, whilst less time was occupied. It was a great advantage to get the work done in September which would otherwise be postponed till December or January; and he was convinced that £1 laid out in early autumn cultivation would be equal to £3 in the spring. He would ask Mr. Sutton what system of steam cultivation he thought was best adapted for occupiers in that district?

Mr. SUTTON: Much would depend upon the size of the holdings; also upon the nature of the land.

Mr. REEVES: Take a farm of 500 acres.

Mr. SUTTON: From what I have seen of this neighbourhood, and looking at the size of the enclosures and the hilly character of the land, I should recommend what is called the roundabout system for a farm of that size.

The CHAIRMAN: The tackle with one engine?

Mr. SUTTON: Yes.

Mr. W. WARNER said he had had a little experience with the steam cultivator, from which he considered that by using it soon after harvest they would find it beneficial in that neighbourhood. He had used it in scarifying two fields; and his opinion was that steam cultivation was calculated to be especially beneficial where the land was thoroughly drained; but he doubted whether it would answer so well where that was not the case, as it might tend to make the soil follow water than if it had not been ploughed so deep. One obstacle to the introduction of steam cultivation into that district, which he admitted was desirable, was its great cost at first. If manufacturers could make the cost of purchasing the apparatus less, he believed it would be very generally adopted; but whilst the expense remained so large, it would not be adopted by the majority of farmers, who would not be able to afford it.

Mr. WYATT had not tried steam cultivation himself, but had watched its effects in the parish where he resided. His conclusion was that it was likely to do more harm than good in very light soils, which might be stirred up too much; but it would be very useful on stiff land, which was underdrained.

Mr. HOLDWAY had been very much gratified with what he had heard respecting the results of steam cultivation, of the advantage of which there could not be two opinions. He had seen it in operation on Mr. W. Warner's farm, and observed that the work was done in a first-rate manner, though the surface of the land was very uneven, and the furrows very deep, which might be avoided another time. He had yet to learn, however, that steam apparatus could be rendered available for farms of 200 acres, or thereabouts, because a tenant of a farm of that size could not afford to lay out £800 in the purchase of an apparatus which he would only require for about six weeks in the year, namely, about August or September; nor did he think it would pay gentlemen to purchase it and let it out on hire; and as to its being worked by public companies, recent experience showed that such affairs, after giving employment to managers, engineers, secretaries, and other officers, generally ended in a "winding-up." He did not make these remarks with the view of depreciating the introduction of steam cultivation into that locality—far from it; but he should like to see the difficulty of rendering it available for farms of about 200 acres overcome. He had read the report of a discussion on this subject which took place at the London Farmers' Club, when one gentleman stated as much as 72 acres was finished by the steam apparatus in one day; and when some one expressed astonishment, the same gentleman rejoined that had it been 100 acres he should not have been at all surprised. On the same occasion the working expenses had been calcu-

lated to be at the rate of 8s. 6d. per acre, including wear and tear and incidental expenses.

Mr. W. WARNER said instead of using the apparatus only at the end of August and the beginning of September, it would be available also for cleaning the land in April and May for the summer crops.

Mr. HOLDWAY had noticed that all who spoke on the subject at the London Farmers' Club said they laid their steam apparatus by after August or September, and brought their horses out; they could not dispense with all horses entirely.

Mr. ROSLING, in answer to Mr. Wyatt's observation, said steam cultivation was adapted for light soils as well as others; the advantage of using it in the former case being that it pulverised the land, and so enabled it to hold more water, which was beneficial for the root crops.

Mr. SPOONER said they should endeavour as much as possible to give the discussion a practical bearing, and he reminded them that the subject on the card was "steam cultivation as adapted to this locality." The discussion seemed to turn principally on the point—how the new system would be applied with profit to small farms? There seemed to be a difference of opinion on the subject in that room, although, having asked several practical farmers who had used steam cultivation, and who resided in the neighbourhood of Salisbury, where it was employed to a considerable extent, if they were satisfied with the results, and they all answered that they would not be without it on any account whatever. One farmer, whom he asked what sized farm he thought would justify the tenant in going to the expense of purchasing steam tackle, stated that it would answer on a farm of 800 acres, 400 of which were arable. Having seen the steam-plough at work on that particular farm, he found that it did its work admirably, working with great facility both on level and hilly land. On a farm in Dorsetshire, it had encountered great difficulties from the soil being covered with large flints, besides being extremely hilly, but there the rope was carried to a considerable distance above the surface without any inconvenience. He had seen many instances of steam-cultivation, and had met, as others might have done, with some cases of failure, which had arisen either from the purchase of too expensive tackle, or because the land was full of large flints or boulders, causing frequent breakages, or from having unskilful workmen, and insufficient supervision, or other causes. One of the greatest drawbacks to the introduction of steam-cultivation was the heavy expense of the wire rope. There could be no doubt of the greater economy of steam-power, as compared with horses, which had been shown by calculation to be as 1 to 3 or 4; but then the cost of drawing water for the supply of the engines in the field brought the relative expense of steam and horse-power to a closer point than it would otherwise be, and especially when the cost of ropes was added. That was a greater difficulty at first, however, than it was now. Mr. Fowler made his first trials with hemp rope, which, proving ineffectual, he tried iron, which had now given place to a better material, namely, steel wire, and to avoid its dragging on the soil it was carried a little above the surface by means of porters, by which the object to a great extent was gained. It was of great importance to avoid friction by dragging along the ground, and he thought there was still some room for improvement in that respect, so as to obviate the difficulty more entirely than was done by the present system of porters. As to the question whether the improvement resulting to the land would justify the introduction of steam-cultivation, he might refer, in proof of the affirmative, to the experience of Mr. Dibben, a practical farmer, to whom he had alluded in his previous remarks, and also to that of Mr. Smith, of Woolston, who invented it, and who had used it on a small property of his for ten years. Some had suggested that it should be worked by means of joint-stock companies, but he did not think such a plan as that would answer, from the expense of management and other matters. The suggestion that a few farmers whose land adjoined each other's should unite for the purpose of purchasing steam tackle between them was a good one, as they might easily arrange who should use it first and so on. Another plan of introducing it into that locality would be by some persons purchasing the tackle and letting it out for hire, which might be worked with the engines used for steam thrashing. One gentleman present seemed to think that steam ploughing on land would not answer on light soils, but the discussions which had taken place on the subject before the Central Farmers' Club and the Royal

Agricultural Society conclusively showed that it would be attended with advantage on land even of that description. Its introduction into this neighbourhood would enable them to bring more soil into cultivation, which would be a great advantage. If they looked at a geological map of the district they would see that a great portion of it consisted of that description of soil which admitted of being broken up to a greater depth than was at present done, and the fertility of the land would thus be increased.

Mr. WITHERS would be glad to see steam cultivation introduced into that locality, and offered, if any one chose to let out steam tackle, to hire it for cleaning 50 acres next year.

Mr. SUTTON said he would briefly reply to the objections which had been raised. As to whether it would be judicious to employ steam cultivation on stiff clay land which was at present undrained, he should say that deep cultivation would be beneficial, though in some cases water furrows and surface drainage might be required to assist in carrying the water off. He had known cases where high ridges on cold clay land had been done away with by steam cultivation. He remembered a field of 66 acres in the neighbourhood of Bedford which had been cultivated for years in high ridges, and required five horses to plough it, and when the farmer commenced to plough it by steam everybody predicted his ruin, but the result was that the crops were increased, and now there was neither water furrow nor surface drain required in it. Still experience showed that all heavy clay land ought to be drained. Mr. Warner had overstated the cost of steam apparatus, for he could assure him that instead of £800 he could be supplied with an efficient steam engine and tackle for £600, which would enable him to reduce his number of horses by one third, or 8 out of 24, thus saving £200, besides the cost of the maintenance of those horses, which, at £30 a year each, would be an additional saving of £240, making a total of £440 towards the first cost of a steam apparatus.

Mr. WARNER: But there is also the cost of wear-and-tear of the engine and tackle.

Mr. SUTTON said, on a fair average that would not exceed 1s. 6d. per acre. In answer to Mr. Wyatt's objections, he thought that the farm he referred to could not be properly drained, or perhaps the outlets were not properly looked after. In reading the accounts of the 178 farms visited by the Royal Agricultural Society's commissioners, they would find that very few men had been unsuccessful with steam cultivation, and it was generally accounted for by carelessness or want of attention. They would find some cases of failure, but the majority were successful; they must recollect it was not a plaything. Mr. Holdaway seemed to doubt whether steam cultivation would answer on farms of 200 acres. Now he understood that Mr. Holdaway's farm contained 200 acres of arable land, and he thought it would answer his purpose to make arrangements with Mr. W. Warner for using the same apparatus, which would save him three horses out of the nine he now employed. Where several farms of about 200 acres each adjoined, steam tackle might be purchased in partnership, for he did not believe that agriculturists could not combine their capital for carrying on their occupation in the same way as was done by commercial men. As to steam tackle being available at other times besides in August and September, or just after harvest, there was much force in the observation of Mr. W. Warner, who found it useful in preparing his land for the summer crops; but the great advantage of steam tackle was that it enabled them to do the work of the farm exactly at the time it was most wanted. On Lord Sudeley's estate in Gloucestershire it was worked by night as well as by day, which he referred to for the purpose of showing the energy with which agricultural operations might be carried on by availing themselves of steam power. It was something more than a substitute for the old system—it afforded them the means of embracing new ideas in the cultivation of their land and the harvesting of their crops. He agreed with Mr. Spooner that until the introduction of steel-wire ropes steam cultivation encountered great difficulties, and much of its present success, he believed, was due to the introduction of that improved material. The expense attending steel ropes was now brought down to a reasonable figure, and the cost of wear would not exceed, on an average, more than 6d. or 1s. per acre.

The following resolution was then proposed, and carried

unanimously: "That it is the opinion of this club that steam cultivation may be advantageously adopted in this neighbourhood, and that on arable farms of 400 acres and upwards it would pay the occupier to purchase tackle for his own use, and on smaller farms to do so by two or more adjoining farmers uniting together and sharing the expense. In the absence of

such arrangement it would be very desirable to give every encouragement to persons disposed to purchase and let steam apparatus for hire."

A vote of thanks to Mr. Sutton for his lecture, and to the chairman for presiding, concluded the proceedings.

FOOT-ROT IN SHEEP.

A correspondent of the *Sydney Morning Herald*, who says he has had twenty-five years' active and practical management of sheep, gives the following explanation of "foot-rot," and promises to "continue the subject yet further, through the stages of prevention and cure": "Foot-rot is fistulous. The primary causes for its appearance are many; principally it begins either after, or during, continuous rains, when the sheep are exposed to much surface water during the day and dirty yards, or, more properly speaking, bogs at night. During the day, some one or more sustain a slight cut or bruise to the foot or feet. This may be caused either by retaining particles of grass between the claws, and either treading upon these themselves, or being trodden upon by others of the flock, the grass acts as a knife upon the now-softened foot, makes a cut; this opening fills with dirt, and is the initiation of disease; or the feet of the sheep may be stone-bruised; the dog may round sheep up upon a sharp or stony spot, and their feet be injured. From whatever cause, there can be no doubt but that the foot of the sheep must first be cut or injured before symptoms of foot-rot exhibit themselves.

"Had the wound been cleansed, and the injured sheep kept apart from the flock for a day or two, months, perhaps years, of tedious toil and trouble would have been avoided. Many of our sheep-farmers never think of this; the sheep are placed at night in yards some inches (I was going to say feet) deep in animal soil in a state of fermentation from the wet. Such a camp for an uninjured foot would be bad enough, how much more must it affect a wound of the size and nature described?

"Thus day after day the sheep are taken out and kept up to the flock by the dog, and, instead of mending, the number of injured or lame sheep increase, principally because they are subject to this excessively-heated, although wet bed, at night.

"Keeping more to the point, the foot becomes filled with dirt, the juices or foul matter of the soil upon which they bed at night are absorbed into the blood, and rapid yet certain are the strides of disease. Thus from a simple cut, neglected, if ever noticed, arises one of the most difficult complaints with which the sheep-farmer has to contend. Follow the cut through its course, and we find it closes up, and to all appearance is sound; but beneath that skin lie many particles of dirt, irritating and inflaming all the surrounding parts, until, to relieve itself, it breaks, discharges a highly virulent pus, capable of inoculating any number of feet that it may come in contact with. As this disease progresses it assumes many forms; the foot becomes enlarged, swollen, and violently inflamed. If left to nature these symptoms may decrease, but never entirely disappear. The claws of the foot flatten and grow in all shapes, the tread or soles of the feet decay, grow again, each new formation prevented from becoming a sound and permanent growth by the presence of foreign matter, not visible upon cursory observation.

"Some of my readers may ask, How is it that we have seen sheep afflicted without any of these premonitory symptoms? Simply because the affected sheep have been upon the same run, if not in the same yards, previously occupied by sheep suffering from 'foot-rot.' They have been inoculated with the pus left by their predecessors. This pus retains its contaminating power for a very long time, more especially when mixed with the soil of the yards.

"So far as my experience has led me, I believe that foot-rot is nothing more than a neglected sore, caused in the first place by some trifling accident; it remains unheeded, and from its position so subject to the introduction of irritating matter prevents its healing, but precipitates itself into a foul ulcerating wound—the discharges from which, by their violence and

activity in acting, spread the disease rapidly through the flock. It is not the growth of a day, but the seed once sown is certain to develop itself. What the shepherd reports as a few 'lame ones,' are long reported 'short,' or left upon the run unable to travel. The enemy is at work, and unless speedy and active action be taken, serious will be the loss."

PREVENTION OF FOOT-ROT IN SHEEP.

There are some portions of the lands of the colony, now, as well as for many years past, occupied by the sheep farmer, which are from their nature, both as regards soil and grasses, totally unfit for sheep. More especially are those runs productive of disease where the system of "standing yards" is adhered to. With such runs, possessing so many antagonistic features, obstructive to the views and wishes of the most energetic and skilled management, I have nothing to do—they must be catalogued as "unfit for sheep," and strong must be that individual's belief in a "good time," as coming, who will undertake to contend with the combination of losses that ensue.

In my former letter I stated the beginning of this disease. Now we cannot prevent the sheep being cut or bruised accidentally in the feet; but we can prevent them being placed for the night in yards more or less covered with their own manure (at such times as this foulness is in a semi-liquid state). Clean folding, or, what is far better, camping the flocks, should be adopted generally, if not entirely, by all who desire to keep their sheep clean and free from this, as well as from many other contingencies well known to the squatter.

All sheep showing lameness should be at once removed from the flock and kept by themselves. After rain, upon some soils of a tenacious quality, very many of the flock are liable to retain a portion of soil and grass between the claw of the foot; all such appendages should be removed by hand, and to ensure their removal the flock should be very carefully shepherded; for if left they tend to irritate the foot, particularly if already wounded.

It will soon be discovered that when these simple rules are strictly followed, lameness among the number will be confined to the one flock; and should this lameness eventuate into foot-rot, it will be from want of skill or due attention upon the part of the manager.

I am now speaking of those runs upon which "foot-rot," as yet, is unknown; but being satisfied that ignorance, or indifference to lameness, may be attended with disastrous results, upon even the best of country, I hazard these remarks, and proceed to speak of flocks upon what are known as "foot-rot runs."

A portion of the run best suited for the purpose must first be selected as a "quarantine;" to this must be removed all sheep, with even the slightest symptoms of the complaint, care being taken that each and every sheep in the one or the many flocks are subjected to a strict examination.

Having cleaned the flocks, the desirability of placing them in clean folds, or camping, cannot be too strongly advocated: in fact, the cure or prevention of the rot cannot be ensured without this is kept in view. All old yards or folding-grounds upon which diseased sheep have been kept should have their surface or accumulation of manure burned; the object in so doing is to destroy all the virus remaining from previous occupants. Having by these means got a sound-footed flock, we must not flatter ourselves the rot has passed and gone for ever; far from it. The run is known to have produced it before, and the same want of attention will produce it again and again. The most rigid watch must be kept over the flocks.

THE GROWTH OF ROOTS.

Mr. W. C. Isaac, of Reading, read a paper at the monthly meeting of the Newbury Farmers' Club, the subject being "The Growth of Roots."

Mr. ISAAC, in the course of his address, said: In an assembly like the present it is quite unnecessary for me to detain you by making any observations on the importance of the growth of roots, because you well know that the growth of roots is that particular feature which not only distinguishes the agriculture of this country from all others, but which also enables it to stand pre-eminent. It is by the growth of roots that the population of this country is supplied with an abundance of healthy animal food, for you must be well aware that if the production of beef and mutton depended upon the grasses or the pastures of this country, it would fall very short indeed of the demand. And when you know that the eastern counties alone supply the London markets with more beef and mutton than every part of England and Scotland besides; and when you know that it is the practice in those eastern counties to feed their animals almost exclusively on roots grown by the aid of artificial food, no argument is wanted stronger to show the importance of the subject to agriculturists. The influences which regulate the growth of roots are three or four-fold—viz., the soil, the atmosphere, and those artificial means which are used so successfully in this country to resist the one and the other. The preparation of the soil is a subject much more familiar to you than to myself. One grand point must be acknowledged by all—viz., to get the physical condition of the soil into a proper state, sufficiently pulverised to retain moisture, and to receive the influences of the atmosphere. In this country we are favoured with a climate which admirably suits this crop. We have a temperate climate, in which there is not the excessive heat which prevails on the Continent, nor that excessive amount of rain which falls in some places; neither are we visited with the extreme cold of Russia to prevent the crop being fed off. It is of great importance to the successful growth of the root crop that the amount of moisture that falls during the year should fall with a tolerable degree of equality during the various months. The growth of roots requires a gradual amount of rain, and too much moisture is not favourable to them, therefore it was that in the eastern counties they raised better roots than in the western, with the exception perhaps of the mangold, which root would take more moisture. There is no doubt that the larger amount of the food of the turnip crop is derived from the atmosphere, and the smaller amount from the soil; but much of that even derived from the soil is rather from the atmosphere that exists in the soil than from the soil itself, the soil being the vehicle. I will pass on to an important item in the success of a root crop, and one that I may perhaps, from long study, possess some knowledge on—viz., the application of artificial manures, and the results. It is not many years since that phosphates were spoken of as the peculiar manures for the grain crop, and ammonia manures for the green-crop, the reason being given that they found a ton of wheat contained a great deal more phosphate than a ton of turnips; but they forgot that when they came to the acreage they could raise twenty tons of swedes, when they could only raise one ton of wheat, and in fact it had been proved over and over again that the peculiar and essential manure for the turnip-crop was phosphate of lime; and the reason why this was the case was, that the custom in this country was to feed the crops of roots off the land, in doing which the greater part of the phosphate of lime was taken away in the bone, and a portion in the flesh of the animals; while other essential ingredients, of which potash was the most abundant, was returned again to the soil by the manure left behind. It was a most important fact that the one was taken away in the shape of beef and mutton, whilst potash and various other elements were left behind in the manure. Then another important fact is that the great growth of the turnip is made in a very short time. Then there is another fact, which is of great importance, that the leaves of the turnip-crop contain double per cent. of phosphate of lime to what the

bulb does; and as the leaves are put out before the bulb has made any growth, it is readily explained why this should be the case, in order that the leaves may have assistance in their infant state, enabling them to expand and absorb the necessary and large amount of food derived from the atmosphere, because in proportion to the development of the leaves would the roots penetrate into the ground in the search of nourishment, which might be artificially supplied, or which existed in the soil itself. You are all well aware how fatal to the progress of the roots is an attack of fly, or a severe storm cutting the leaves. It is now more than twenty years since superphosphate was introduced; but before that bones in a crushed state had been applied with great success, because it was a new manure, and the soil had been exhausted of an essential element. Then, again, the different acids found in the soil, and the carbonic acid found in the atmosphere in the soil, had the power in time of dissolving the phosphate of lime in the bone, causing it to be more soluble and adaptable to the wants of the plant, though the process was a slow one. Then came the introduction of superphosphate. If phosphate of lime is the essential food of the root-crop, it is apparent that the more it can be presented in a soluble form, the more readily will the plant take it up, and the idea was at once acted upon by chemists and manufacturers in this country. With what result? The immense trade done is the best answer; and if manufacturers had to depend on bones alone for their phosphates, it must be acknowledged that the supply would long since have ceased, and it would have been impossible to meet the wants of agriculturists. The whole world has, in fact, been searched for these phosphates, and there is no fear of being exhausted of phosphate of lime. Phosphate of lime consisted of three parts of lime and one of phosphoric acid; now by applying a certain quantity of sulphuric acid, it united with two-parts of the lime, leaving the other part combined with the phosphoric acid, which was then in a highly soluble state, and when applied in this state the rain came and dispersed it into the different parts of the soil in thousand smaller atoms, and a shower of rain would dissolve an infinitely greater portion, and render it fit for the food of plants, than if supplied originally in an insoluble state; and the effect of supplying phosphate of lime was greatly to increase the turnip crop by eight or ten tons per acre more than the natural state of the soil, and may be continued year after year. There were, however, peculiarities in some soils where phosphate of lime did not take so good an effect on the root crops as others, but where ammonia manures told more; on stiff clay land, guano doubtless told with greater effect. I have often been asked with regard to phosphate of lime—why not make the whole of it soluble? Now, there would be no difficulty in doing so; but a greater quantity of sulphuric acid would have to be used in dissolving it, which would make the manure more moist; and if they used a drying substance, it would reduce its value. With regard to mangold, an equal part of guano with superphosphate will be found to be the best to grow a good crop. Mangold needs artificial assistance in the shape of manure in the early stages, forcing it into rough leaf; and if you get a luxurious plant in its early stage, it derives more nourishment from the atmosphere, and thus, in all probability, a good bulb is the result. The mangold, like the turnip and other root crops, varies in feeding properties according to soil, climate, and other circumstances under which it is cultivated. The mangold being originally a native of a warmer climate than that of the United Kingdom, we invariably get our best crops during dry hot summers. In the year 1863 some very intelligent and painstaking farmer tried a number of experiments in the cultivation of the mangold, and endeavoured, at some considerable trouble and labour, to give the public the benefit of it. The particulars were printed; and it may not be out of place to give you the summary, the season being now close at hand to commence the cultivation of this important root, so that it may be of some interest to you. He says: "The soil on which the experiments were conducted is a light sandy loam, resting on the ferruginous sand and sandstone of

the lower oolite, variously tinted by the oxide and silicate of iron. The land on which the experiments were made is situated at an elevation of 325 feet. It consisted of about eight acres, and formed one side of a twenty-acre field. The farm is managed on the five-course system; consequently the preceding crop of 1861 was barley; that of 1860, wheat; that of 1859, mixed clovers. During the whole of the summer of 1859 the land was grazed by sheep, which had a daily allowance of cake or corn, so that the land was in good condition. As regards manure, the barley in 1861, at seed-time, received a dressing of 3 cwt. per imperial acre of phosphatic manure, specially prepared for this crop; and during the autumn of 1861 the land was thoroughly cultivated twice over with Coleman's cultivator, then harrowed and rolled, and all weeds were carefully collected and burnt. It was ploughed up to the depth of 10 inches about the middle of December. In this state it remained till the first week of April, when it was crossed with Coleman's seven-tined cultivator, working to the full depth of the plough. It was then cross-ploughed, harrowed, rolled, and thoroughly pulverised, and was reduced to a fine state of tilth by the end of April. The ridges were opened with the double mould-board plough, on the 2nd and 3rd of May, to the width of 27 inches. On the 5th and 6th of May, 20 loads of rich farmyard manure were drawn out and spread in the ridges. This manure was the produce of bullocks eating daily 60lbs of good swede turnips, 4lbs. of linseed cake, 6lbs. of meal (bean and barley), with about 14lbs. of cut chaff, two-thirds straw to one-third hay. The beasts were tied up in feeding, from which the dung was cleared out daily in the open yard, tenanted by younger stock eating straw and turnips. Three weeks before it was used, the manure was turned and well watered with the liquid drainings collected in a tank in the yard, the buildings being all spouted. This liquid consisted principally of the urine of the cattle. The farmyard manure was spread in the ridges in the usual way, and over this was sown broadcast, specially prepared mangold manure in the proportion of $2\frac{1}{2}$ cwt. to the acre, and the whole was covered in with the double plough. The artificial manure was analyzed by a competent chemist with the following results:—Moisture 8.11, organic matter 25.93, silica 3.66, soluble phosphate 20.96, insoluble phosphate 14.76, sulphate of lime 26.60, nitrogen 3.03, equal to ammonia 3.97. This manure cost £7 15s. nett cash, delivered at the nearest railway station. The seed, yellow globe, was steeped twelve hours in rain water, after which it was put into a sack, where it was kept at a temperature of 90 degrees for three days, when most of it had started. In this state it was sown on the 6th of May, in the proportion of 5lbs. to the acre, by means of a two-row turnip drill, having a seed-box specially made for sowing mangold, and which deposits the seed from cups, instead of the brushes generally used for turnip sowing. This box is simple and inexpensive; if required for turnip sowing, brushes can be readily substituted. We have tried different methods of sowing, dibbling, and drilling mangold; but for cheapness, regularity, and uniformity of depth—the three great desiderata—we find nothing equal to the system above described. When we committed the seed to the earth, the weather was showery and the soil in a favourable state; but owing to the moist state of the land the ridges could not be rolled down till the 13th of May, when, notwithstanding the land was much beaten and washed by the recent rain, several plants had made their appearance above ground. Soon after the plants were set for the first time, they were attacked by the mangold-wurzel fly (*Anthonia Beta*), which has greatly injured our crops for the last two years, and was quite unknown in this neighbourhood previous to 1860. As yet we have found no means of preventing the ravages of this destructive pest. The fly deposits its eggs on the under-surface of the leaf; the maggots, as soon as they are hatched, eat their way into the middle of the leaf, feeding on the pulpy substance, and destroying its vitality. When a crop is attacked the leaves soon present a brown and scotched appearance. On the 17th of June they were gone through the second time with the hand hoe, and all weeds carefully cut out from between the plants; the horse-hoeing was continued at regular intervals of about a week. Being aware of the importance of nitrogen to the mangold crop, on the 21st of June 1 cwt. of nitrate of soda and 2 cwt. of common salt per acre were sown broadcast on four acres, in order to test the efficacy and results of the nitrogenous manures on the production of this crop: the weather, being showery at this time, was ex-

trremely favourable for its application, and the horse-hoe being immediately used, the manure was all either covered or dissolved. July 23rd or 24th, the whole of the eight acres was subsoiled between the ridges 12 inches deep with Gray's subsoil plough drawn by three horses. July 24th, on two of the four acres where the nitrate of soda and salt were previously applied, we again put a second dressing of 1 cwt. per acre of nitrate of soda, using the horse-hoe to cover it in as before. The system we have long pursued of preventing the plant running to seed is this: As soon as they show any appearance of seeding, a careful man is sent through the crop, who, with a sharp knife, cuts off the seed stems close to the crown of the root; and if carefully watched and cut off during the early stages of their growth, little damage is done. We found by our experiments, where seed was forced, a far greater percentage of the plants showed signs of running to seed than where the seed was sown in the usual way. Before storing the crop, we carefully took up, topped, cleaned, and weighed a part of each lot, viz., that which received one dressing of nitrate of soda, that which received two, and the lot manured in the usual way. From considerably extensive practice in testing the weight of root crops when growing, we find the fairest system of ascertaining the true weight is to select an average of the crop; when that is satisfactorily determined, measure 46 feet, taking a ridge for the line or hypotenuse of a triangle; then take 6 feet or one chain in length, place each end at the marks before set up on the base line; a man taking the chain exactly by the middle pulls it tight, another man with a sharp spade passes along and divides all the roots where the line touches; the same operation being repeated on the other side gives an area of four square poles. The roots are then got up, cleaned, trimmed, and weighed. They are weighed in quantities of 56 lbs., that weight being the same fraction of a ton that four poles is of an acre; consequently each weight of 56 lbs. is one ton per acre of crop. We have found this plan greatly simplify the weighing of all root crops, and prevents many errors and mistakes which frequently creep into the calculations. In measuring one or two poles in the same direction as the rows run, it is often found difficult to know with sufficient certainty to which side some of the roots should belong, so that a small error when multiplied 160 times may swell to considerable magnitude in the end. On weighing an average 4 poles of the 2 acres which received two dressings of nitrate of soda, the bulbs closely trimmed and cleaned, the produce was 28 tons of bulbs, and 8 tons 13 cwt. tops, from 18,180 roots. No. 2, which received only one dressing of nitrate of soda, produced 26 tons 12 cwt. 2 qrs. 4lb. clean bulbs, and 7 tons 5 cwt. 1 qr. 12lb. tops from 18,080 roots; while those that were dressed with farmyard manure and nitro-phosphate produced 22 tons 12 cwt. 16lb. clean bulbs, and 5 tons 11 cwt. 20lb. tops from 18,020 roots. The appearance in favour of the double dressing of nitrate of soda over the farmyard and phosphate manures only was 5 tons 2 cwt. 3 qrs. 12lb. bulbs, and 3 tons 1 cwt. 3 qrs. 12lb. tops, at an extra outlay of 26s. The difference in weight between that which had a double and that with a single dressing was only 1 ton 3 cwt. 1 qr. 24lb. bulbs, and 1 ton 8 cwt. 3 qrs. tops; while the difference in favour of 1 cwt. nitrate of soda over that which was done in the usual way was 4 tons 1 qr. 16lb. bulbs, and 1 ton 14 cwt. 20lb. tops." Having now in a very brief and imperfect manner given you some sketch of the cultivation and growth of roots, I must leave you to fill in the practical remarks, feeling assured that there are many more able than I am to treat this part of the question; the object I gather of these mutual meetings being quite as much to elicit the views, opinions, and experience of others, as to hear the set views or theoretical part of any subject, such as may be given in the paper I have just read, the paper being merely the introduction, and on that I trust a useful, profitable, and lively discussion will ensue. Many facts, doubtless, that I have mentioned are familiar to you, and others required only bringing to your remembrance; if, therefore, the bare fact of the importance of the growth of roots be only brought before you by the paper I have just read, it will, doubtless, lead you to pay more attention to the cultivation of such an important article of food in the making of beef and mutton, and whilst you benefit yourself benefit mankind at large, for he is indeed a true benefactor to his country who makes of causes to be made two blades of grass to grow where only one grew before.

Mr. J. G. WENTWORTH said his experience taught him that the moderate-sized roots were best, as they did not get hollow so soon as the large ones. They ought always to look to the quality of the roots, and not merely to the size. He had heard of the non-success of salt for swedes, but had tried it with rape himself with good effect.

Mr. SPACKMAN: What land was that upon?

Mr. WENTWORTH: I tried it upon light land, such as you could track a hare over in May.

Mr. Geo. HUNT observed that it was important they should keep their land as clean as possible. He thought 18 to 30 inches was a good interval for swedes, and the sooner they could get the horse-hoe into it the better. They were apt to neglect the first hoeing, which was one of the most important things to be attended to in growing a root crop.

Mr. H. FRAMPTON said he always planted at an interval of 2 ft. for his earliest swedes, as that distance was much better for horse-hoeing, and he considered 20 inches were not sufficient for the hoe to work properly.

Mr. S. WENTWORTH said there was no doubt that different soils required different manures. He thought that superphosphate and guano mixed formed a valuable manure. He found that a good preventive of the turnip fly was to put in the roots on stale ground instead of fresh.

Mr. EVANS believed that one great cause which prevented them having good roots was that they had their land in a foul condition, and were obliged to clean it in the spring, and he agreed with those who said it was most important to plough in

the autumn and not afterwards. He found that by putting a pretty fair amount of farm-yard manure on the land, and then some artificial manure, he could grow better roots than by using a large quantity of farm-yard manure alone, or artificial manure only: getting a good tilth and carefully horse-hoeing were both very important.

Mr. J. G. FRAMPTON said it was a maxim which his father used to hold, that the proper time to hoe was as soon as the leaves were as big as a halfpenny, and he believed that to be a good rule.

The CHAIRMAN then expressed the thanks of the meeting to Mr. Isaac for his valuable paper, and proceeded to advocate the use of the cultivator immediately after harvest. He cautioned his agricultural friends not to deposit the mangold wurzel seed too deep, as it ought merely to be covered, and then a light roller should be passed over it. All this should, if possible, be done in one day, to get the advantage of all the moisture. He had no doubt the same remarks applied to the cultivation of swedes. In order to get the land into a good tilth they must eradicate the weeds, and this should be done at least three weeks before the seed was deposited. With regard to the time of sowing, he preferred the last week in April or the first week in May. His experience led him to differ with Mr. Wentworth as to sowing turnips on a stale furrow, for if they got their land into a good condition they might laugh at the fly. The sum and substance of all they had heard was that there was nothing equal to farm-yard manure for roots. Still it might be of great advantage to have a little dose of guano to fall back upon.

THE WHEAT PLANT.

The following extracts are from an article written by Lewis Bollman, of Bloomington, Indiana. There is no history which takes us beyond the cultivation of the wheat plant. Some believe it was created as it now is, and was from the beginning the every-day food of man in the form of bread, from the curse pronounced against Adam, "In the sweat of thy face shalt thou eat bread." In his lamentation for Tyrrus, the prophet Ezekiel says, "Judah and the land of Israel they were thy merchants: they traded in thy market, wheat of Minniath." From this we see how ancient were the production and commerce in wheat; and the history of all nations shows it to have been the chief product from which bread was made. It has consequently assumed an importance above any other cereal. When America was discovered it was not found on this continent. It was, however, soon brought here; and a slave of Cortez, finding a few grains in some rice sent from Spain, carefully preserved and planted them, and from those, it is believed, the wheats of Mexico and the Northern Pacific have been derived. It was introduced into the Elizabeth Islands of Massachusetts in 1622, and in 1611 into Virginia. In 1718 it was brought into the valley of the Mississippi, and in 1748 flour was first shipped from the Wabash river to New Orleans. This was the commencement of a trade that has become a part of the history of the West, and rendered the free navigation of the Mississippi so essential to its prosperity that no political changes or necessities will ever be permitted to close or obstruct it. Although the wheat crop of the United States is much less in number of bushels than the corn crop—the one being, according to the census report of 1860, 170,176,037 bushels, and the other 622,694,528 bushels—yet the market value of it is not much less than that of corn.

THE WHEAT REGION OF THE UNITED STATES.—"The natural and permanent wheat region," says Mr. Klippart, in his Essay on the Growth, &c., of the Wheat Plant, "lies between latitude 33 and 43 degrees north. This wheat region embraces Ohio, the south parts of Michigan and New York; the whole of Pennsylvania, Maryland, Virginia, and Delaware; and in these states we find where is raised, or has been, the greatest wheat production. Ohio stands at the head of all the wheat-growing states in the aggregate of her production. Her crop in 1850 was 28,000,000 bushels, being nearly 16½ bushels to each inhabitant. Thus the reports of the geological survey of Ohio show the soil to be clayey, clayey loam, and clayey subsoil, and it produces 16½ bushels to each inhabitant; while Indiana, with a richer soil, produces only 8½ bushels; and Illinois, with a still richer soil, produces only 7½ bushels to each

inhabitant. Virginia, Maryland, and Delaware, as well as New York, were formerly great wheat-producing sections. But many parts of New York that formerly produced 25 bushels to the acre, do not now average over 5 bushels; and many parts of Maryland, Virginia, and Delaware, that formerly produced abundantly, will not now pay the cost of cultivation. 'Exhaustion' is written all over them in language too plain to be misunderstood."

THE INFLUENCE OF RAILROADS ON WHEAT PRODUCING.—A wheat region without transportation facilities is unavailable. It is necessary, then, to examine what these are, to show the 'capability' of the wheat region of the United States: its extent only has as yet been shown. Up to 1850 no one dreamed of the network of railroads which has since been spread over the north-western states. A single road connecting the eastern states with St. Louis was all that the most sanguine hoped to see; but events in England made railroad iron there cheap and in great abundance, and with its characteristic energy the West was not slow to avail itself of the inducements proffered. We are told the earth at first was without form and void, and that darkness dwelt on the face of the deep until there was light, and the waters separated from the land, when the earth was clothed in green and every tree yielded its fruit. Our railroads were almost as miraculous in their influence over all the region of the north-west: the wilderness became a fruitful field, and untravelled wastes bloomed and budded as a garden. They opened the interior of its states to commercial connexion with all the sections of the country at all times of the year. There was breathed into the farmer a new spirit, and he became another being. The contrast between his present and former condition is seen in every page of the census report of 1860. So vitally is it connected with the production of the north-west for the present and the future, more especially with the wheat crop, that a table of these roads becomes an essential part of an essay on wheat:

	In 1850.	In 1860.
Michigan ...	342 miles	799½ miles.
Wisconsin ...	20 "	932½ "
Iowa ...	0 "	679½ "
Illinois ...	110½ "	2,868 "
Indiana ...	228 "	2,126 "
Ohio ...	575½ "	2,999½ "

In this vast increase of railroads during the last decade we see the cause of that corresponding increase of the wheat crop of the north-west. With the progress of railroads in Missouri we see the wheat crop increasing also, and the available

wheat region of the United States is bounded only by the limits of railroad enterprise. The projected railroad to the Pacific will be a spinal column to all that unsettled region, stretching out, on either hand, a wide country of prosperity and beauty.

THE PRESENT AND FUTURE MARKET FOR AMERICAN WHEAT.—*The Present and Future Home Market.*—Although the increase of wheat has been 70 per cent. during the last decennial year, yet at no previous period have prices been so satisfactory to the producer. Fluctuations there have been, as there always will be in all markets for all productions; but the average price in this period exceeds the average price of any other like period. The cause of this is to be found in a better home and foreign demand. Had the home demand but increased only with the increase of population, the average price would have been much less; but it has much exceeded this, and the cause for it is explained, by the census report of 1880, in the great increase of manufacturing labour. The statistics of Ohio show an increase in its agricultural productions, and its mining, manufacturing, and mechanical industry, and its commerce and navigation, as follows: Corn crop, 18 per cent.; wheat (about), 20 per cent.; horses, 63 per cent.; cattle, 40 per cent.; hogs, 15 per cent.; mining, 300 per cent.; manufactures and mechanic industry, 90 per cent.; tonnage, 260 per cent. The tendency of the older agricultural states is to increase those pursuits which create consumers of agricultural products; whilst those regarded as manufacturing have made rapid progress in all branches of manufacture and mechanical employments. Thus these pursuits aid and sustain each other, and call into existence another class of labourers profitable to both: those engaged in the commerce, navigation, and transportation which the interchange of their commodities create. The wheat product may be taken as an illustration of these influences of manufacturing industry. It amounted, as already stated, to more than 170,000,000 bushels in 1860. The value of flour and meal manufactured was 223,144,369 dollars, nearly all of which was consumed in the home market; the export being but 16,360,582 dollars.

THE FOREIGN MARKET.—In an article on wheat in Prussia, published by M. Judd, our minister at Berlin, but evidently prepared by an intelligent Prussian, this remark is made: "Official statistical reports of the whole quantity of wheat produced annually in Prussia do not exist at all, because all experiments to fix the quantity have remained without result." If this is so in the small, enlightened, and highly agricultural kingdom of Prussia, how uncertain must be the estimate of Russian grain production, so large in territory, and with a population so heterogeneous in races, language, customs, and laws, and how unreliable must be the accounts of German grain production, with its numerous principalities! Still we have a good deal of statistical information of grain production and consumption, sufficiently accurate, for my present purpose, to present a general estimate of the demand on our country for its wheat from the deficits of European nations. Great Britain is the only country that has a permanent deficit in breadstuffs. In 1792 it imported 209,225 bushels of grain, and exported 2,802,594. This was the last year when its exports exceeded its imports. From that time until about 1846, on account of the vast increase of its manufacturing industry, sustaining a dense population, the deficit of breadstuffs has ranged from five millions of bushels to twenty-eight millions. In 1848, a year of unusual scarcity, on account of the potato rot of 1847, the imports of wheat were 24,793,564 bushels, and of flour equivalent to 17,721,362 bushels, making, together, 42,514,926 bushels. In 1839, about twenty-eight millions of bushels of grain were imported by Great Britain, of which about twenty-four millions were wheat, nearly all of which was furnished by European nations, as follows:

	Quarters.
Prussia	740,203
Germany	409,729
Russia	371,693
Italy	335,612
France	278,182
Denmark	192,730
Holland	116,480

2,148,629

26,063,787 American bushels, the English quarter being

equal to nine and one-third bushels of sixty pounds. France may be regarded as capable of supplying only its own consumption of breadstuffs. In 1860 and in 1851 it exported, the first of these years, about fourteen millions of dollars worth, and the second about sixteen millions, whilst in 1856 and 1857 its imports were, in both years, 49,677,535 bushels of grain. Prussia, eminent for its agriculture, furnished to England, in 1839, nearly double the amount of any other nation; yet of itself it possesses no ability beyond the supply of its own wants. The wheat product of Austria is stated to be 92,824,681 bushels, with a population of nearly 40,000,000. If its consumption is no more to each inhabitant than in Prussia—two-and-a-quarter bushels—the entire consumption would be 90,000,000 of bushels, leaving but 4,824,681 bushels for seed. So far, then, as it affords supplies to Great Britain, these must be drawn from Russia and Poland. Germany and Italy may be regarded as occupying a similar position to Prussia and Austria—unable, from their own wheat product, to export to other nations. And here I may remark, that nearly all these countries consume potatoes in large quantities, so then from the uncertainty of this product, unusual demands at home will often arise for wheat, thus rendering a dependence upon them by Great Britain too uncertain to be relied upon. Russia, alone, produces an amount of breadstuffs far exceeding its own wants. Its Poland possessions are the best wheat regions in Europe, and the extent of production is limited only by unskilful husbandry and the want of railways. A product so universally and so largely consumed as flour creates a commercial interest that cannot now be traced out, for the space it would require cannot be given. From the mill it passes through the hands of the wholesale dealer, the exporter, the retailer; is taken on every railroad, on every steam-boat and ship, as the distribution carries it from the granaries of the west to the consumers in the east and south, and in foreign countries, until the household bakes it into bread; and the city bakers again send it into every district of our country as crackers and biscuits; and all the labour bestowed on it is constantly added to its value; and the farmer (that it first benefits) asks in return the various manufactures wrought by the skill of the labourer at the looms. I have mentioned the great influence exercised over the wheat production of the West by the railways passing through it. It followed that this increased production gave large employment, in return, to these and other roads. The freights of wheat and flour make a leading item of railroad, steamboat, canal, and ship transportation, calling into active employment the builders of ships, and cars, and locomotives, and increasing largely the number of persons necessary to the working of them. All this varied labour is for the good of all, for it sustains the existence of all, unattended with any incidental evil. The sweat of the brow, decreed as a punishment to our first parents, has been sanctified to us in those diversified pursuits which the necessity of bread has created. Strike out of existence the wheat product of our country, and when and how could the vast void be filled? And in view of the magnitude of its importance as a food essential to all at all times, to the poor and the rich, in health or in sickness, to each one, no matter what occupation or condition of life, how Godlike in its simplicity and necessity is the prayer taught us by our Saviour, "Give us this day our daily bread."

THE NATURE OF THE WHEAT PLANT.—Whether the wheat plant has always been as we now find it, or had its origin in an inferior plant, is a question not well settled. A French gardener, M. Fabre, sowed the seeds of a coarse grass named by botanists *eylops*, in the fall of 1839, which ripened in July following. Its seeds he sowed in the fall of 1840, and continued sowing the seeds every year until in 1846, when the plants then raised were regarded by all who examined them as genuine wheat plants. Its changes from the coarse grass were gradual, at first producing few seeds, but which increased in number as its resemblance to a wheat plant became stronger. This experiment would indicate that the wheat plant is the result of cultivation. On the other hand, its deterioration, when uncultivated, should be rapid until it resumed the characteristics of a coarse grass. This does not seem to be the case, for the wheat plant was found growing wild in California and Oregon, over a large extent of territory, and under circumstances that precluded the supposition that it had been cultivated by the Indians. Here it exhibited itself as a genuine and thrifty wheat plant. Whether this is the result of a

climate and soil highly favourable to it, or because it was created at first a wheat plant, can be determined only by further experiments. Until these are made, the presumption must be that our cereals, like our grasses, first grew with all those distinctive differences they now present. The numerous varieties of the wheat plant undoubtedly had a common origin, for it is much modified by soil, climate, and cultivation. In Europe there are the white, yellow, and red varieties; but in the United States commerce recognizes but two—the red and white. They also differ in some, having smooth heads, while others are bearded; and some being sown in the fall are called winter wheats, while others are sown in the spring, and known as spring wheats. But all these differences may be changed the one to the other, by soil, climate, and time of sowing. Winter tropical wheats cannot endure the cold of the temperate regions, but may be acclimated to them. The influence of climate alone is seen in the marked differences between wheats raised in the belt of the trade-winds, such as the Chilian, Australian, and Californian, and those of rainy regions, as of the United States. Rains seem to thicken and darken the skin or husk. Hence the fine wheats of our climate cannot be successfully grown in a different climate, but will deteriorate to the general standard excellence of the country to which they have been taken; so, also, in early or late maturity. An early wheat in the hot climate of America will lengthen its season in such a moist and cool climate as that of England. Hence our constant failures to improve our varieties of wheat by importing seed from other countries. After being acclimated they present no important difference from our own. The nature of a plant as to its elements can be known from analysis only. As these elements are derived from the soil, modified into different forms and prospects by the peculiar vital forces of each plant, the analysis of the plant and the soil become of the highest utility to the farmer, for they teach him what soils are naturally adapted, or must be made so artificially, for the production of certain plants. There are three analyses of every plant—first, the “ash analysis,” being that part of it which remains after burning; this shows the mineral element of the plant; it is usually known as the “inorganic analysis”; second, the “organic analysis,” or the “atmospheric,” being those elements of the plant which it derives directly or indirectly from the atmosphere; third, as these atmospheric elements are compound bodies, they may by analysis be reduced to their elements, and such analysis is called “proximate.”

ANALYSIS OF WHEAT.—When 100 pounds of wheat are burned, about two pounds of ashes remain, showing the relative proportions of the ash and atmospheric elements. The analysis of the ashes is as follows:

	Per Cent.
Potash	29.97
Soda	3.90
Magnesia	12.80
Lime	3.40
Phosphoric acid... ..	46.00
Sulphuric acid	0.33
Silica	3.35
Peroxide of iron	0.79
Chloride of sodium	0.09

When the grain of wheat is analyzed before burning, it is found to contain the following atmospheric elements:

	Per Cent.
Water	14.83
Gluten	19.64
Albumen	0.95
Starch	45.99
Gum	1.52
Sugar	1.50
Oil	0.87
Vegetable fibre	12.34

These analyses show the reason why wheat flour has been through all ages and so universally used for making bread. It contains a large proportion of gluten, which gives it tenacity when made into dough, and by which it is made light with yeast. Maize has but 3.68 of gluten, and hence it cannot be made light as wheat dough. Hard flinty wheat contains about 2.50 more of gluten than soft wheats; hence their higher commercial value. But gluten is of the highest value as food because it forms muscle or flesh; whilst oils, sugar, gum, and starch form fat, and sustain the animal heat of the body, through the breathing of the lungs. Not unaptly, therefore,

is wheat bread called the staff of life, for it imparts strength to the muscles.

DISEASES, ENEMIES, AND CASUALTIES.—There is none of our cereals so liable to injuries from diseases, enemies, and casualties, as the wheat plant. It has the “gauntlet” to run from the time the seed is sown until the sheaves are in the stack. No matter how promising the crop may be at any stage of its growth, the farmer considers everything doubtful until it is cut. The causes creating this uncertainty merit a thorough investigation to determine how far they are a part of the nature of the plant, or to what extent they may be avoided by a more careful cultivation. I will consider the most destructive of these diseases. The rust, or mildew, or the smut are the most fatal to the wheat crop of the United States.

THE MILDEW, OR THE RUST, AND ITS REMEDIES.—The oldest of our historians, the Bible, frequently alludes to it as common among the Jews, and represented it as one of the punishments inflicted on that disobedient people. The Hebrew name for the rust “yareoon” (meaning a yellow colour caused by moisture), is indicative of the cause and appearance of the disease then, as we find them now. In all times and among every civilized people this disease existed, and a moist stalk, heated by a hot sun, is the cause of it; hence heavy dew, precipitated by clear, cool nights, succeeded by a hot sun during the day, soon develop the disease now as it did in the most ancient periods. It was not until the microscope was invented that the true nature of the disease was known. There is a species of plant which lives on the sap of other plants, called “parasite.” The rust and smut are plants of this character. The microscope shows the fact that rust is a perfectly formed plant, having roots, stems, and branches, and producing seed too small for the unaided eye to discover. These exist in innumerable quantities in the atmosphere, awaiting the condition essential to their germination and development.

THE SMUT AND ITS REMEDY.—The disease of the wheat crop destroying the grains of the wheat by enclosing in the husk a fetid black powder is known as the smut. It is the most singular of all parasites. This powder, when viewed through the microscope, is seen to be a collection of small seeds, which adhere to the wheat when all are thrashed together. Whilst growing the wheat plant absorbs these seeds with the sap which enters the roots, and when thus introduced into the interior of the plant they germinate and use the sap of the plant and its entire organization, even to the husks of the grain, to the production of its own seeds. The plant thus affected by smut does not grow so large as a healthy one, and exhibits a very dark green appearance from the blackened sap within. The remedy against smut is by soaking the seed wheat in washes of different kinds—among which is that of dissolved bluestone, having considerable strength—during one night, and then mixing quicklime with the still-wetted wheat. Another is to use salt instead of bluestone, soaking the same time, and followed by the same application of quicklime.

THE HESSIAN FLY.—The received account of the introduction of this fly into the United States is known to every person, for its common name refers to it. That it was brought in some straw with the Hessian troops, employed in the revolution against us, is possible; but the history of like pests shows that sooner or later they spread over the whole earth where their favourite food may be grown and climatic influence will permit. The bee-moth and the curculio are instances of the fact that nearly all the products of the farm have their enemies. It is not necessary to describe this fly, nor particularize the nature of its depredations, except to say that it deposits its eggs, from 20 to 40 in number, in the hollow of the blades of the wheat. The egg hatches a small, light-coloured worm, in from four days to three weeks, according as the weather is warm or cool. The worm crawls down the leaf between the sheathing of the leaf and the stem, firmly fixes itself there, sucking the juices or sap of the plant, on which it lives. It gradually becomes imbedded in the stem by the latter growing around it. As it increases in size, it becomes in colour, size, and shape like a flax-seed; hence this state of the larva is called the flax-seed state. In this condition it remains during the winter, unaffected by the severest cold. In May it is changed into the fly, and this fly lays its eggs higher upon the same stalk, and on others around it, and also on the spring wheat. These eggs hatch, and the worms undergo the same changes until in August when they

appear as flies, ready to deposit eggs on the young fall wheat plants. The fact that of so many eggs but few hatch (for not more than two or three worms are found on the same plant) shows that the Hessian fly has its deadly enemies. This is true, two of which I will notice, being parasites of this parasite. Both these eggs hatch, but the worm from the last-deposited egg is within the worm of the Hessian fly, and it lives upon it until, having undergone its various changes, it emerges from the skin of the Hessian worm a fly, ready to deposit its eggs in those of the Hessian fly. The other parasitic insect lays its eggs in the

larva when in the flax-seed state, which hatches within it and lives upon it. It is to these friendly insects we owe the fact that the Hessian fly does not spread over large districts of the wheat region—nor, indeed, to any part of it to any great extent—and that it is seldom destructive in the same place for more than a season or two. The friendly flies by their rapid increase soon drive the Hessian fly to other portions of the country in order to shun their fatal attacks. The usual remedy against the Hessian fly is late sowing of the winter wheat.—*New York Grocer.*

FARRIERY AT THE FRENCH EXHIBITION.

[TRANSLATED FROM THE JOURNAL D'AGRICULTURE PRATIQUE.]

Amongst the numerous products of all kinds collected together at the Universal Exhibition, few noticed the instruments, models, and different specimens of an art, the importance of which we must not measure by the small degree of attention too generally accorded to it. We allude to objects relating to the shoeing of domestic animals, especially the horse, which we know has a great influence upon the comfort and preservation of that species.

It is true these groups attracted little notice, being destitute of that brilliancy which strikes the eye and draws a crowd: there was little in them to excite curiosity. "It is only some horse-shoes," exclaims the visitor, as, wandering along, he chanced to catch a glimpse of them in the glass cases appropriated to them, and he passes on without bestowing another thought upon them. But it is not altogether the same with the connoisseur or the artisan, who can find in these unattractive objects matter for an interesting study upon the present state of farriery and the progress made in that art, whether in France or other countries.

Most of the European countries exhibited either shoes, or specimens of their particular method of farriery. Thus, besides French farriery we found in the Exhibition at the Champ de Mars, as at Billancourt, articles relating to English, Belgian, Austrian, Prussian, Italian, and American farriery, &c.

In the Belgian section we noticed particularly one lot, contributed by M. L. Van Howe, farrier at Bruges, comprising a series of the principal shoes used, both in England and France.

In the Prussian section, that branch was represented by a numerous collection, formed specially for the enlightenment of pupils at the Royal Academy of Eldena, uniting in five large cases nearly every form of shoes known in Europe, both for healthy and diseased feet. Much might be said upon the exactitude of these imitations, but their perfect uselessness places them beyond criticism.

In the Austrian Exhibition we saw no shoes, but merely a box of tools for shoeing, of a rude form, and unsuitable even for that to give a good idea of the farriery art in Austria. On one side is a sort of tool, combining in one single piece the different instruments used by the farrier; it is doubtful whether the workman who has lost his time in manufacturing this tool-omnibus possessed a very exact idea of the practice of farriery, as an instrument of that kind is scarcely calculated to simplify it.

We must again refer to the collection of shoes placed in the annexe of the Italian section, some of which resemble the French form; whilst others are made thin at the inner edge, like English shoes, but upon the whole they present nothing original or really worthy of imitation.

A collection of a more decided character might be found in the Exhibition from Uruguay; there were models of different forms of shoes used in South America, which are chiefly remarkable for having a sharp raised edge at the under face, an arrangement no doubt rendered necessary from the nature of the land, but which greatly complicates the fabrication. In the same case we found collected all kinds of shoes, in the construction of which fancy appears to have had a large share, thus giving us another proof of the facility with which imagination often wanders in search of the difficult and complex, rendering impossible things which would gain far more by being simplified.

Be that as it may, the principal fact brought out by an examination of these foreign shoes, is their common tendency to approach the French method; there is a manifest disappearance of the peculiarities special to the farriery of each nation, replaced by an imitation more and more marked, of one unique model, of which the shoe used in our country is the evident prototype.

Nevertheless, under this head, one important exception must be mentioned: we allude to the English shoe, which never varies, remaining always *itself*, disdaining all foreign imitation, or even any modification which might in the least resemble an imitation of others.

—Yet, the English shoe is not by any means perfect—far from that, in our eyes it is defective in the most essential points. It is not only inferior to the French shoe, but in our opinion, as well as that of every man competent to judge, in spite of the favour it has acquired amongst us in a certain circle, there is none in Europe more likely to destroy the equilibrium of horses, and injure their feet. This is more particularly the case where that lamentable custom of English blacksmiths is practised, of scooping out the hoof so extensively in putting on the shoe, thus taking away the most sure means of protection the animal has, against the causes of injury to which it is incessantly exposed.

It is well known that the foot of the horse, destined in a state of nature to serve only as a means of support in walking or standing, carries normally upon the sole, over the whole lower surface, comprising three divisions; first, the wall, or peripheric resistant border; second, the frog, forming an elastic cushion behind; third, the sole, occupying the intermediate space, and completing the support. This arrangement is necessary, each of the three divisions having its part to bestow, essential to locomotion. In the first place, they protect the tender tissues from outward injuries; then they receive the great shocks produced upon the limbs by locomotive action, and deaden them, while at the same time they favour a quick pace, by reaction after supporting him, like true springs. In fact, the two parts which form the surface have their peculiar use, which is to form an obstacle to the contraction of the hoof, and thus preserve the foot from all those local diseases which are the consequence of it.

Knowing this, it is easy to conceive what would happen if the two latter of these important divisions were destroyed, the sole and the frog, leaving nothing to support the animal but the inferior and narrow border of the wall, and this is what takes place every day from that useless and barbarous operation called *paring the foot*: First, by weakening that part they expose it more immediately to injuries and exterior wounds; while, on the other hand, by abolishing the obstacle indispensable to the support of the normal division of the hoof, they promote the development of hoof-bound, sand-cracks, wire-heel, &c., by taking away from the hoof, with the safety of support always necessary, the elastic action so useful in the execution of its pace.

Strange to say, this pernicious and common custom exists almost everywhere, though not to the extent to which it is practised in England; there the farriers, not content, like our French workmen for example, with paring from the foot the surplus horny skin which covers it, scoop out the hoof as deeply as possible. In order to do this they use a peculiar tool, the penetrating action of which is well expressed by its

name, the drawing-knife; with this instrument they cut and excavate the hoof in every sense, reducing it without measure, so as to render the skin of the sole flexible under the finger, and take away from that part the last trace of resistance.

The result of this *insane* practice—there is no other word to express it—cannot be imagined without pain. The wall, which contains nothing, contracts more and more, producing hoof-bound, the consequence of which is not only the compression of the soft parts, always accompanied with great suffering and halting, but the development of a peculiar disease, the navicular affection, consisting in a very serious deterioration of the articulation of the foot, causing constant lameness; a disease scarcely known anywhere but in England, because it is only in that country that this barbarous practice of shoeing, which is the decided cause of it, is in use.

In order to remedy this disease, which is the more to be dreaded because it is incurable, and baffles all direct means of treatment, the farriers and veterinary surgeons have tried a series of empiric remedies, all alike ineffectual, and consequently useless. But it does not seem to have entered into their heads to trace the evil back to its real cause, and banish it by putting in practice a more rational mode of farriery. If they have done it in any case it must have been only a rare exception, at least if one may judge by the observation, we were enabled to make at the Exhibition, which does not show any trace whatever of a trial of that kind, and contains only specimens of the usual system.

The best collection of the kind exhibited was that sent by Mr. Dollar in the English section; there we find, arranged in a beautiful glass case, a superb collection of hoofs, shown in the English fashion, all perfectly made, glittering with elegant polished nails, complete jewels put under glass. This group contains the exact models, we have reason to believe, of every variety of English shoes; but, alas! it only serves to show their utter ignorance of the conditions of good farriery. In fact, all these feet are so scooped out that they form perfect goblets, showing in its most exaggerated form the capital vice which is the origin of all the evils suffered in the feet of English horses.

Such an exhibition, showing such complete ignorance of the physiology of the foot, demands, in the name of art and hygiene, severe condemnation; yet, far from that, we find in the middle of the case a placard with this inscription, "Prize Medal." This astonished us at first, but further information explained the mystery: the prize, so strangely awarded, was given, we were told, for the beauty of the model hoofs and polished nails, &c. No account was, therefore, to be taken of the distinction accorded by the jury of the Industrial Arts section, except just to point out the character of it to the public, who might be deceived.

English farriery was again represented in the Park annexe, among the metallurgic products of England, by a list of the different shoes used by the British cavalry. They differ from those used generally in not having the traditional groove. The method of application is otherwise the same—that is to say, it is as bad as for other horses in the country.

In the tent of the Protection Society, was a lot, comprising different apparatus, such as plates and leather cushions, hand calkins, portable frost shoes, &c., which can be placed under the hoof immediately when snow falls, and prevents the horse from sliding. At a push these snow-plates, as they are called, might be used with advantage; but, happily, the same end may be attained by far more simple means.

2. We now come to the French department, which is more numerous and varied, but unfortunately the specimens must be sought for in different parts of the Exhibition; the Grignon tent, and that of the Society for the Protection of Animals, at Billancourt, the body of the building, and the different annexes, all contain specimens, and the inconvenience of this arrangement shows itself by the repetition in each group of the various objects exhibited.

The collection of French farriery may be divided into several series: the objects, such as shoes, hoofs shod, tools, &c., fact, all the accessory apparatus used in the practice of farriery, connected with the usual method, the innovations made, and, in

The first group contains different collections, more or less numerous, constituting altogether a complete picture of all that the art of farriery comprises amongst us, and consequently all the elements necessary for studying that art for the purpose of appreciating its absolute or relative value,

either as regards the horse, or in comparison with the shoes used in other countries. Now, the most evident impression resulting from an examination of these collections, apart from all national self-love or party spirit, is the incontestable superiority of French farriery over all others, both as regards the manufacture of the shoes and their method of application. Our shoes are better made, and at the same time of a more regular, simple form. The hoofs are better pared, less scooped by the action of the buttons, and consequently less injured. The equilibrium is better kept by the position of the shoe, and the result of all that is, the hoofs being in a better state, lameness is less common than amongst English horses.

Amongst the various collections exhibited, one from Billancourt, by M. Pecheron, veterinary surgeon at Paris, is remarkable—chiefly for its size at least. It comprises on one immense table an interminable series of French and foreign shoes, normal and pathological. This ill-conceived collection, made larger by the useless repetition of the same types, and incomplete even in that respect, in spite of the surface that it covers, is not at all calculated to give an exact idea of what it pretends to represent. For instance, amongst the French shoes, of which we counted certainly no less than 126, a large proportion have long been out of use, leaving one to suppose that they never were used except for ornament, or a kind of *chef d'œuvre*—the traditional sign of the old blacksmiths; but in any case they are not entitled to figure amongst the models adopted in the real practice of the art.

With respect to the foreign shoes arranged upon the same table we have but one remark to make—there is not one the authenticity of which we can guarantee, most of them having evidently been manufactured by French workmen from models which may be seen drawn in all the schools. That may suffice for elementary instruction; but a public collection demands something more.

There is a more simple collection also at Billancourt, which we greatly prefer to the pretentious case exhibited by M. Pecheron; it is contributed by M. Coutel, of Saint-Jean, and is composed solely of shoes used at the present time. Another should be mentioned, sent by M. Legris, of Louvriers, which is a beautiful collection of shod hoofs, indicating the hand of a clever workman; but, if anything, too elaborately got up for such objects. Horses' hoofs are not intended to ornament a drawing-room; and unless M. Legris meant to give them to the ladies of his acquaintance, it seems to us that he had better have spared the red velvet that covers them.

Near these lots there is another no less worthy of attention—that of the farriers in the 19th Regiment of Artillery, designed to show in one large case all the objects necessary for studying the art of farriery practically. It contains sections of hoofs for the purpose of showing the anatomy of that organ, instruments used, shoes applied, &c., and they have added to their exhibition a specimen of every novelty made in farriery recently invented. It is a good collection, and, apart from the very excellent execution of the objects themselves, appears to us worthy of special notice.

Something analogous to this exhibition, though less complete, may be found in a collection contributed by M. Lambert, in the Protective Society's tent. It has attached to it, upon a separate list, an enumeration of all the laws of farriery, and in the same category may be classed another lot in the Grignon tent, which figures amongst the objects for show in the Zootechnical Court of that school.

A careful study of these various collections, which all imitate each other more or less, and thereby give a better testimony to the general character of the uniformity of French farriery, leads to the conclusion that even the latter, in spite of its relative perfection, is not all that could be wished. It is still wanting in some points, the proof of which is that there are always some defective hoofs, lameness has not wholly disappeared, and there are numbers of horses annually incapacitated for service by the method of shoeing. This proves that in spite of the care exercised in its application for preserving the hoof, they still place the iron under the foot, which completely isolates the latter from the ground, making it in a manner an obstacle to its natural support, deprives it of one of the most indispensable conditions, as we have said above, to its regular constitution and solidity; at the same time, to its good preservation, and finally of the only efficacious means of protecting it from those more or less serious disorders by which it is liable to be attacked,

We have for a long time noticed the many evils habitually resulting from the ordinary shoeing, even when performed to the greatest perfection, and we have endeavoured to correct it by different processes, founded upon the idea that their authors entertained of the real causes of the accidents observed. From hence many systems of shoeing, which have especially multiplied during the last few years, the principal models of which have appeared at the Exhibition. These processes, each of which has for its object the realisation of some special improvement, are of very unequal value. Some of these cannot in any point of view be either approved or recommended. Such are the shoes of M. Raquin, veterinary surgeon of Montrichard (Loir-et-Cher), with a thick plate on the inferior surface, the only effect of which would be to crush the heel; the pigeon-shoe (P) for low heels, feet, or roof, presenting larger sponges even to the extent of covering the frog, and much more calculated to aggravate the state of the foot it is intended to apply to, than to heal it; the nailless shoe of M. H. Rival Marchal, at Saint Chartier (Indre), consisting of a kind of double ox-shoe with a hinge, with raised edges at the circumference, and a sole of copper, which, by avoiding contact with the ground and the shoe, constitutes an irrational innovation to the first head. These several shoes are collected in the stand of the Protective Society, from whence a more judicious appreciation of their real effects certainly ought to have banished them.

In the same group is another shoe, invented by M. Tabourin, Professor at the Veterinary College at Lyons, the leading feature of which is a projecting flange, a kind of circular and continuous pinion of moderate height, the object of which is the better retention of the foot, consolidation of the shoeing, and to allow a diminution of the nails in number. If the shoe during the journey has a tendency to slip forward on the foot, the obstacle presented by this flange might have some effect, and this mode of shoeing consequently possesses some advantages; but the effect being contrary and the shoe tending rather, where the animal travels and clings to the ground, to slide backward, this means of consolidation becomes useless, or nearly so, and consequently the invention—of it is one—has no useful object. Experience will probably confirm this, if this shoe is ever put to the proof, which it never has been at present.

Another system is that of M. Peillard, Captain of Gendarmerie of Tarbes, consisting in the employment of a shoe divided into toes, the object being thus to leave to the foot the facility of expansion and dilation, which the inflexible character of the common shoe does not offer; but presents an obstacle to its natural movements, and constitutes a new inconvenience to all those which his system involves. But if the enlargement of the foot, the result of its elasticity, is a fact beyond dispute; the separation is certainly of too feeble a character, in order that the division of the shoe, however rational it may appear, should not overshoot the end contemplated by originating another danger—namely, that of a want of solidity in the shoeing.

We know, in fact, that when an ordinary shoe, even solidly attached, becomes broken in its length, it is necessary to change it immediately, in order to avoid, with the falling of the fragments of the divided shoe, the injury of the foot. This fact alone would suffice to demonstrate that the shoe of M. Peillard, which is an imitation of a similar shoe invented formerly by M. Sempastons, and afterwards abandoned precisely on account of its want of solidity, is little calculated to be adopted in ordinary practice. M. Peillard, foreseeing this difficulty, has endeavoured, by an ingenious modification, to consolidate his shoe, without injuring its moveability. For this purpose he substitutes for the simple cut like a V, for the toe of the shoe which he had first invented, a slit furnished laterally with a semi-circular projection, forming a kind of ear, which keeps much better fixed together the two branches of the shoe. We have seen, even at Tarbes, several horses, and especially that of the inventor of the process, wearing for a long time a divided shoe of the kind, and exhibiting, we must admit, all the solidity desirable, and with the feet themselves in a good state. There is therefore reason to think, that, in certain conditions, this shoeing thus modified might be employed with some advantage. But for what relates to daily use we dare not, without much longer experience, declare the success complete.

Lastly, we have to describe the mode of shoeing extolled

and practised by M. Nauden, Chief Veterinarian to the 19th Artillery, who proposes to remedy at once the excessive weight of ordinary shoes, the danger arising from their slippery surface, the inconvenience of that border called "garn ah," usually left on the shoe, and which, by uselessly overloading the foot, exposes it to be more easily wrenched; the little solidity which attends the present system of punching, involving the employment of nails, which not being able exactly to adapt themselves, grow rusty, break at the neck, and renders the shoe liable to be detached.

In order to effect these several improvements, M. Nauden employs a shoe, of which there were several specimens at Billancourt, in the frame inclosing the Show of Farriery of the 19th Artillery. This shoe is narrower and more slender than the ordinary shoe, of equal thickness throughout, and presents exactly the form and dimensions of the foot, and without border. The pyramidal punch-holes receive a nail of similar form, without a neck, which adapts itself directly, and never falls out. Such a shoe, applied to a foot from which has been taken only the superfluous rind without paring or scooping it away, offers all the desirable conditions of solidity, and constitutes in its bare simplicity the most considerable and important improvements that have up to this time been applied to the mode of shoeing generally in use. Employed for all the horses of the 19th Artillery and of many other regiments, it has, besides, received thus the approval of a practical experience extended enough to enable us, while attesting its relative value, to declare its real superiority.

This mode of shoeing, however, in spite of its advantages over the ordinary system, leaves this last still with its principal inconvenience, namely, that of forming an obstacle to the direct support of the foot upon the ground. To remedy this, it requires not merely a simple improvement, however considerable it may be, but a radical reform, a complete transformation of the method in common use. This reform has been accomplished with success which increases daily by the invention of the *Periplant* shoeing, due to M. Charlier, and too well known to the readers of this Journal to require a new description of it.

I shall therefore confine myself to a description of the principle of this mode of shoeing, which consists simply in the use of a narrow shoe, the thickness of which does not exceed that of the wall that surrounds the foot, and which is applied no longer underneath it, but in a circular groove, formed in the inner circumference of the hoof. This last organ, preserving in a manner all its integrity and its inferior face, not being able to come in contact with the ground, the foot finds itself brought the most completely possible to its normal conditions of support. The shoe is limited to offering a means of protection beneficial to that part of the hoof most exposed to use, at the same time leaving to the rest of the organ the freedom essential to its natural expansion. This suffices to relieve the foot from affections too frequently occurring, and where these do exist, to cause them speedily to disappear. The feet are reconstructed and reformed, and improved in every way, without reckoning other advantages resulting from the substitution, for the heavy and fatiguing shoe still in use, of one light, narrow, and borne without trouble, leaving to the action more freedom and safety; and lastly and most essential, by the fact of the participation of the hoof in the support, it is prevented from slipping upon the hardest ground, and even on snow and ice.

There are considerable advantages which explain sufficiently the rapid success obtained by M. Charlier, producing nothing less than a complete revolution in the art of shoeing, the influence of which is felt on the numerous imitations of which the new method has been the prototype. But it is on the horses' feet and the workshops where it is actually practised, that it is, above all, possible to obtain an exact idea of it. It is there that we can most surely appreciate the services it is calculated to render, and to obtain a conviction of its approaching substitution of the usual method.

In concluding this review of the objects relative to shoeing displayed at the Exhibition, we have still to mention several articles, as the mechanical shoes of the House of Mansoy, at Clichy; the *Perchell* shoes, also mechanical, made by the M.M. Constant Brothers, at the forges of Ivry-sur-Seine, and which were found mingled in all the groups of the French Exhibition containing the products of farriery. These shoes have a deep groove, single or double, of equal width in all its parts, and

which has for its effects to lighten the shoes, and, by filling it with earth, to prevent the formation of that slippery surface, so favourable to falls. These shoes are manufactured sometimes by means of a laminated and channelled bar, which only requires to be shaped and stamped, sometimes in a press, and at one blow. Great cheapness is realized in the price of manufacture, but the difficulty experienced in fixing the nails in the groove, in which the action of the hammer cannot be effective, prevents our pronouncing definitely on the practical value of this species of shoe, or on its durability.

We found there the *mechanical adjuster* for shoeing, of M. Clement of Geneva, a kind of *pedometer* analogous to the

shapes used by the hatters. This apparatus certainly answers its purpose; but its complication, its price, and above all, its practical inutility, render it inconceivable for what object the inventor has sacrificed his time in the construction of an instrument so absolutely condemned at once never to be tried.

Let us notice lastly the *Lefevre hipposandale*, an imitation of the shoe of the ancient horse, and modestly reserved by the inventor to facilitate the application of cataplasms on the feet. This is not worse than others, but the apparatus has long been known by all men of art.

Dr. G. GOURDON,
Professor at the Imperial Veterinary
School of Toulouse.

THE TREATMENT OF SHEEP.

At a recent meeting of the Winfrith Farmers' Club, Mr. G. Ellis, of Burghate, read the following paper: "The subject at part for this evening's discussion is 'The Management of Sheep,' a subject of such increasing importance to us as farmers that I feel sorry that you should have selected me to introduce it, especially when there are so many here present who, from experience and skill, are so much more competent than myself, and so much more capable of doing it justice. I freely admit that from early days sheep have been, and still are, my hobby; and as freely do I admit that our club meetings have taught me a great deal while listening to the discussions and detailed experience of those who have made this subject their study as well as a matter of experiment. When I look back 15 or 20 years and consider the great improvement now made in the management of sheep, as compared with the old system, I may perhaps be excused if I say that there is still room for experiments and the acquisition of more knowledge on the part of all who are concerned in keeping sheep. In attempting now to give some of my own ideas on the subject, I ask for indulgence, and where my own experience may seem to contradict that of others, I beg that they will discuss the matter thoroughly, and set me right where they esteem me to be wrong. In introducing the subject I will begin with a flock of stock ewes. Mine, and no doubt those of others, have been put to the ram by this time. Mine went most of them in August, consequently they will begin to lamb soon after Christmas. It is my opinion that the lambs, when yeaned thus early, can endure the heat of the summer, and the diseases to which they are then exposed, far better than lambs yeaned later, and that they will also grow up to a greater size as sheep than later lambs can possibly attain to. Some are of opinion that ewes in lamb should not eat a great quantity of roots till after lambing; others think that they should have no turnips during that period, and have kept them on hay and grass. One person has said that he kept his ewes in lamb upon hay and water only for some years, with, however, but poor success on the whole; so that these experiments prove that mortality will come into the lambing-yard in some seasons, in what way sorer they are managed, and that no rule of management can be laid down with such certainty and preciseness as to ensure unvarying success. With regard to ewes in lamb, I would say that they cannot be too well kept on roots and hay for the last ten weeks before lambing, especially upon farms which are so high and exposed as ours in this neighbourhood are. And I believe that the ewes when in good condition are much safer for lambing than if they are poor and weak, and that the shepherd will not so much require the aid of the milk-pot or bottle to feed the lambs with. But I would lay much stress on feeding the ewes regularly. By no means allow them to go into a fold of turnips very hungry, for if you do they will eat very greedily, and do themselves much harm thereby. I prefer swedes for the ewes when heavy in lamb, because they cannot eat them so fast as they do common turnips. This greedy and fast eating sometimes fills them with wind, and in my opinion causes them to have dead lambs, especially if they have a wet bed to lie upon, and rotten or unwholesome foods to eat. I always lamb my ewes out in the field, in a temporary shed put up on the most dry and sheltered spot that can be selected, and my loss of ewes in lambing for the last ten years has been on the average about four per

cent. Some seasons I have had 200 or 300 lambs in succession, and not lost an ewe—everything seemed to promise the most favourable issue; but before the rest of the flock had yeaned I have had several dead ewes and perished lambs. On other occasions the exact reverse has been the case; the season has begun with perished lambs and dead ewes, while in the latter part of the lambing there has been very remarkable freedom from sickness and mortality. The cause of this difference, in apparently the same favourable circumstances previously, is very hard to discover. Here I may say that a few mangolds given to the ewes before lambing, with swedes and a half-pint of oats each per day, will very much increase their milk, nourish the lambs proportionately, save the shepherd much trouble in using the feeding bottle, and perhaps save the lives of many lambs which are lost every season (in my opinion) by the use of too much cow's milk, owing to the deficiency of milk in the ewes themselves. With respect to the ewes in lamb, I would add that if they are lying out upon turnips, I prefer, if possible, a sloping piece of ground for the purpose, and give them plenty of room; for thus the water runs away from the land, and the ewes can choose a dry spot to lie down upon, and thereby escape the mischiefs that arise from a wet bed, the most common of which, perhaps, is the chilling and killing of the lambs before they are come to their time. As to the management of lambs, which, from their tenderness, require all the farmer's care, I formerly used to put in the lambs' creep (as we called it), and allow them to ramble all over the field of roots, the troughs, with the corn in them, being placed among the turnips. But this plan I have found bad and hurtful. I like the lambs to eat cake, corn, and peas as soon as possible, and they will learn to eat them very early, if rightly managed, especially cake and peas mixed together, and therefore I now pitch a fold round the troughs after the creep is put in, and being thus confined within due bounds, they eat of the cake and peas freely, and acquire greater strength and size than by the former method. By this means I think that a more even and equal growth also is secured to all the lambs; for, as the ewes differ in the quantity of milk which they give to the lambs, those lambs which get least milk from their mothers feed more readily and freely on the cake, and thus keep up their growth in due proportion to the others. I think that we should continue feeding the lambs with cake and corn all through the summer, or even till they are 15 months old. Some will say this is an expensive method; but in reply I venture to say that this plan has answered best with me, and that it has been the means not only of saving the lives of many lambs, but of producing a larger sized sheep, with a heavier fleece of wool. Some farmers like the tegs to go in upon the turnips before the ewes in the winter, eating up part before them; but I think that tegs and ewes do better when sent to their own separate ground, and that for the young ewes and the tegs it is far better to have the turnips cut with a machine and put into troughs for their readier and easier eating, particularly for two or three months in the spring, when their teeth are becoming loose and falling out. If clover or rape has been folded over once in the spring season, the lambs should not be allowed to feed there again, as the sourness of the feed affects the health of the lambs generally, causes the scour, and sometimes brings death upon many. And here it might perhaps be asked if any member

of this club has, under such circumstances of sour feed, &c., fairly tried the experiment of coarse salt exposed in troughs, to which the sheep and lambs might resort when they pleased, as I have been told that the American farmers are accustomed to do, not, perhaps, with lambs only, but in the general management of their flocks. For the last few years I have put out my Chilver lambs to keep from the middle of October till Lady-day upon a dry, sheltered, and healthy farm, and as the result of this plan, I have found that the lambs did quite as well there with cut swedes and hay as they would on my high exposed farm during the winter upon the same allowance of roots and hay, with the addition of a quarter of a pound of best cake per day for each lamb. With respect to the off-going ewes and pur-lambs, I think that it is really more profitable to keep them well with cake, &c., before selling them, than to expend the same cake in fattening sheep for the butcher. This at least has been my experience, for upon a farm probably from 500 to 800 feet above the sea level, I have found that the amount of corn and cake necessary in winter—not merely to fatten but to keep up the animal heat, without which no sheep can possibly take on any fat—far exceeded any money value derived from the sale of the sheep when fattened for the butcher. We are now come to a very important part of the economy of the flock, and that is the wool. It must be evident to the commonest understanding that upon the proper management of the flock this 'wool harvest,' so to speak, must depend both as to quantity and quality, and the produce of the wool will also be a test of management. A badly managed flock never yet produced a good yield of wool, while a well-managed flock can hardly fail to be productive of the best results, both as regards the quantity and quality of the fleece. An experienced woolstapler at once will detect the quality of our management by the quality of our wool, and it therefore becomes us to look well to this if we have any due regard to our credit or our pockets. I hope that the patience of my hearers has not been exhausted by what I have advanced. If my own ideas are esteemed worthy of any, even the smallest, consideration, it will be a great gratification to me. If on the other hand they appear crude, I must crave indulgence, and hope that something much more advantageous to the general interest will be drawn forth by the discussion which this brief essay is mainly intended to provoke."

Mr. W. BUDDEN remarked that some years ago, when he was in the habit of feeding his sheep on turnips in the lambing season, he was very unfortunate. He then tried a different system and fed his ewes on grass and hay, but without any advantageous results; but in the third year, although the same system was continued, his luck turned, and from that time he had scarcely lost any sheep, and they all knew he had been successful in taking prizes with some very excellent lambs. He agreed with Mr. Ellis's recommendation as to keeping up the condition of the ewes before lambing; he would not say they should be kept too fat, especially in warm weather, but if in moderately good condition they would lamb more favourably, and the milk would be better for the lambs. Considering the high prices which were being realised for wool, it became them to pay great attention to that matter, and he was pleased to say that the yield from his flock had averaged 4lb. each. Mr. Ellis had not said what kind of sheep he had bred from, and he should like to be informed on that point, as Mr. Ellis generally obtained some remarkably fine wool. He afterwards mentioned that he had cut 11½lb. of wool from one of Mr. John Fooks' Cerne rams this season.

Mr. J. A. DAMEN thanked Mr. Ellis for his excellent paper, which was all the more valuable because of its practical character; there was nothing theoretical about it. Everything he had said to-night he had carried out in practice, and Mr. Ellis had certainly a capital lot of ewes. The only point on which he differed from him was in respect to giving mangold to ewes before lambing; he did not think it was beneficial for the milk; but the case was different when he spoke of giving them oats, which was a milk-producing article. Formerly he fed his ewes on mangold and found a deficiency in the milk; but afterwards he changed the feed to turnips with beneficial result. He thought Mr. Ellis's observation as to the feeding on rape the second time was a good one, for he had known many injurious effects arising from it. If farmers kept their sheep according to Mr. Ellis's method they would grow more wool and realise greater advantages in every way.

Mr. R. WHITE did not quite agree with the system of keeping the ewes too well just before lambing; his plan was to keep them a little short for about a fortnight previous, except in bad weather. He agreed with what had been said about early lambs, and felt convinced they would endure the change of feed in the spring of the year, when grass became sour, without being so liable to disease, better than later and consequently more tender lambs would. He did not admire Shropshire sheep, except for fattening; but they were not so advantageous for selling off the lambs and ewes. He considered mangold produced poor milk; but the quality might be improved by the addition of oats. If ewes were kept rather short of feed a fortnight or so before lambing, they were not so liable to inflammation. Some people did not like lambing in a yard; but generally speaking he had found that method both safe and advantageous. There was no rule to be laid down, as far as he could see; the great object was to keep them dry and healthy.

Mr. J. READER observed that some little difference of opinion had been expressed as to the advisability of lambing in the yard or in the open field. If they preferred the close fold, a great deal depended upon the situation; and if they had a low, damp situation, they were likely to lose a great many sheep. But if the fold was on a high, dry, healthy position, they were quite as safe as in the open field. Very little had been said as to the sort of sheep preferred; but Mr. White had said he did not like Shropshires. Now he rather differed from that opinion. If they wanted to sell out pur-lambs it was quite as well to adhere to the Downs; but if they intended to keep their lambs, they would find there was considerably more profit in the Shropshires than in the Downs. They did not lose anything in the old ewes, and they went off quite as readily; after these he liked the Improved Hampshires. He was perfectly satisfied they could get a better back and chest if they secured a good sort of Shropshires than in any other sheep. There was a great difference in the Shropshire breed; but if he might take it as a criterion of quality, he would remind them of the sheep he showed at Dorchester last Christmas twelvemonth, when he exhibited some two-tooth sheep against some of the six-tooth, and was awarded the prize on two successive occasions. He saw some sheep shown at Birmingham in 1866, the best he thought he ever saw, of any description. There was one class of sheep which were very much puffed up—he would not say whose—but he had one once, and if they had not materially improved since, he would not have them at a gift. He concluded by saying that the Shropshires were as proof as any, and yielded quite as good a fleece.

Mr. LONGMAN, after thanking Mr. Ellis for his valuable practical essay, observed that he had lived near him many years, and knew that no one took greater pains with his sheep and few would show a better flock. This was proved by his being able to sell ewes at the present time at 50s. each, without corn or cake; and the lot of ewes he had just going out were as fine as he (Mr. Longman) had ever seen. Mr. Ellis lived in a high locality, although the land was good. He (Mr. Longman) had been very unfortunate for many years, and he thought it was in consequence of the ewes being chilled before lambing and inflammation setting in. He thought a sheltered dry place for the protection of the sheep and lambs by night was to be preferred, allowing them to run out by day, thus sheltering the lambs for two or three days before turning them into the fold. Since he had adopted that plan he had saved a great many more than formerly. He had been using some sheep which he obtained from Mr. Reader, and they were as good as he could wish; they were a mixture from a Shropshire ram and Mr. Reader's ewes. Last year he had a good lot of lambs and very healthy indeed. He had used Mr. Saunders's sheep for many years, and he was well satisfied with them. But he was especially well pleased with the little Shropshire blood he had introduced into his flock, for he thought they produced more with less keep than with some other breeds.

The PRESIDENT said: After the very able statement made by Mr. Ellis, and the practical manner in which he had set the subject before the Club, they had great cause to be indebted to him for coming forward and giving them the benefit of his experience. He thought the little discussion which had taken place on the paper must be accounted for by the exhaustive style in which it had been treated. It was a subject of great importance to farmers generally, when they all depended on

much upon sheep. In the first place there was no doubt they were, as a class, progressing in the quality of the sheep produced, and he felt that it was necessary that they should try experiments. The object of this Club was, in a great measure, to enable them to meet together, and gain experience and benefit from the practices and experiments of others, and, now that the price of mutton was so good, it was an important question to the farmer whether he could not add 3lb. or 4lb. a-quarter to the weight of his sheep. But it was not only the question of mutton, for the better the quality of their sheep the more improved quantity and quality of wool would result. He thought a great deal of the increase in the price of wool was to be attributed to the improved quality and treatment of sheep, and those high prices would no doubt be maintained if they continued to improve the breed of sheep and kept up the quality of the wool. Therefore these facts must be of great importance to all when sheep formed so large an element in the returns of the farmer. He certainly thought they were indebted to Mr. Ellis for bringing the subject forward, and he hoped he was satisfied with the discussion which had taken place upon it. A good many of them must have learnt something to their advantage by what they had heard that evening.

Within his memory—which was not a very long time—there had been many improvements in the breed of sheep. He did not speak of this county, because he was comparatively new to it; but he said generally that farming and the cultivation of sheep were now much higher in perfection than 80 years ago. That, to a very great extent, accounted for the increased value of wool. He could remember the time when 10d. or 11d. was thought a fair, and indeed a good price. He thought as long as they could keep up the quality and improve it they would keep up the markets, and that was equally important as improving the quality of the animal. Then there was this consideration—they obtained a better kind of manure; and he could not help thinking that the extra expense incurred in the purchase of artificial feeding stuffs was fully compensated for by

the advantages which were derived, in two ways—by the extra quality of manure, and by getting the lambs much earlier than formerly. Twenty years ago people were satisfied if they had lambs when the grass came in; but now they expected their lambs to be getting up pretty strong before the grass came. It was found by experience that the earlier lambs were better, and consequently they appeared to be progressing in the right direction. No theory, 20 years ago, could have persuaded a man that to get lambs in an ordinary farm at Christmas would pay; but now, with the artificial feed and increased science and attention on the part of agriculturists, it was found that great benefits arise from having lambs in earlier. They could only arrive at such conclusions by discussing the subject at such meetings as the present, and that was one of the most important features of this Club. They ought, therefore, to be deeply indebted to gentlemen who came forward to give them the benefits of their experience, and he was sure they would agree with him that they were indebted to Mr. Ellis for the admirable paper he had laid before them that evening.

Mr. ELLIS briefly replied, and said for some years he had been breeding from sheep he obtained from Mr. John Fooks at Cerne, and he was perfectly satisfied with them, and they had turned out a large quantity of excellent wool. Mr. Damen had differed with him as to giving mangold to the ewes. He did not mean they should be entirely fed on mangold; he generally gave them a cut of swedes in the morning, and carried out some mangolds for them in the after-part of the day. Mr. Reader had spoken of Shropshire sheep; but he (Mr. Ellis) did not know much about them; but, if he was an anxious breeder of rams in Shropshire and wanted to sell a great quantity, he should certainly be inclined to make Mr. Reader a present of a few, especially if he carried them as he had done at Dorchester. He thought they would be a recommendation in the neighbourhood. The great object they all should have in view was to obtain quality as well as size in sheep.

SHEEP AS A MEANS OF IMPROVING WORN-OUT LAND.

Our observation has led us to believe that the improvement of worn-out or poor lands simply by feeding sheep on them is a very slow process. We have seen large sheep-walks which had been under such management for many years (probably over 30), and yet the improvement must have been very slight, if we might judge by the condition of the land at the end of that period. And if we reflect a little we will see that this is just the result we might have expected. It is true that large amounts of vegetable matter are produced and fed off, and much of this is returned to the soil in a condition which is the very best for promoting its fertility. But at the same time large quantities of the most valuable mineral matters are carried off in the shape of wool and mutton, and the loss thus occasioned is in general very nearly equal to the gain accruing from the other part of the process. This loss might be met, and, in a measure, counteracted by feeding the sheep on the ground with rich food so as to return to the soil more than was taken away. We have seen this done with apparently good results, and Ald. Mechi relates that a farmer of his acquaintance manured his grass land by sowing a portion of it every day broadcast with beans. The pigs were then turned in, and regularly picked up every bean, at the same time manuring the land so sown. Mr. Mechi states that this is cheaper than the dung cart. But we have yet to learn that he has adopted it in his own practice, and we are inclined to regard it as a very wasteful process, as we shall see towards the close of this article.

We have known sheep to be used in three different ways for the improvement of land. The first and rudest plan is that pursued in some portions of the south of England, where the sheep are fed during the day upon land which is considered of little value, and at night are folded upon the fields destined for the wheat crop. In this case the sheep are used as mere manure-carriers or dung-carts, and it is obviously a means of robbing one field for the purpose of dressing the other.

The second method is that which prevails so largely in Scotland, where the turnip and some other crops are fed off the land on which they were grown, by means of sheep. This

is an economical and efficient process, especially when the turnips are supplemented by oilcake or grain. The harvesting, carting, feeding, &c., of the turnips, and the re-carting and spreading of the manure, is a heavy item if the turnips are carried to the barnyard, and there fed to the sheep, and it is, perhaps, unfortunate that our climate does not allow of the same practice—at least to the same extent. In the case of feeding high-priced food, however, after the fashion of Mr. Mechi's friend, the loss is very great. We lose not only the labour of sowing the beans, but the labour of the pigs in collecting them, and this is equal to a considerable amount of pork. Moreover, a ton of beans or oilcake is more valuable as manure when fed with straw or roots, and composted in the barnyard, than when fed alone.

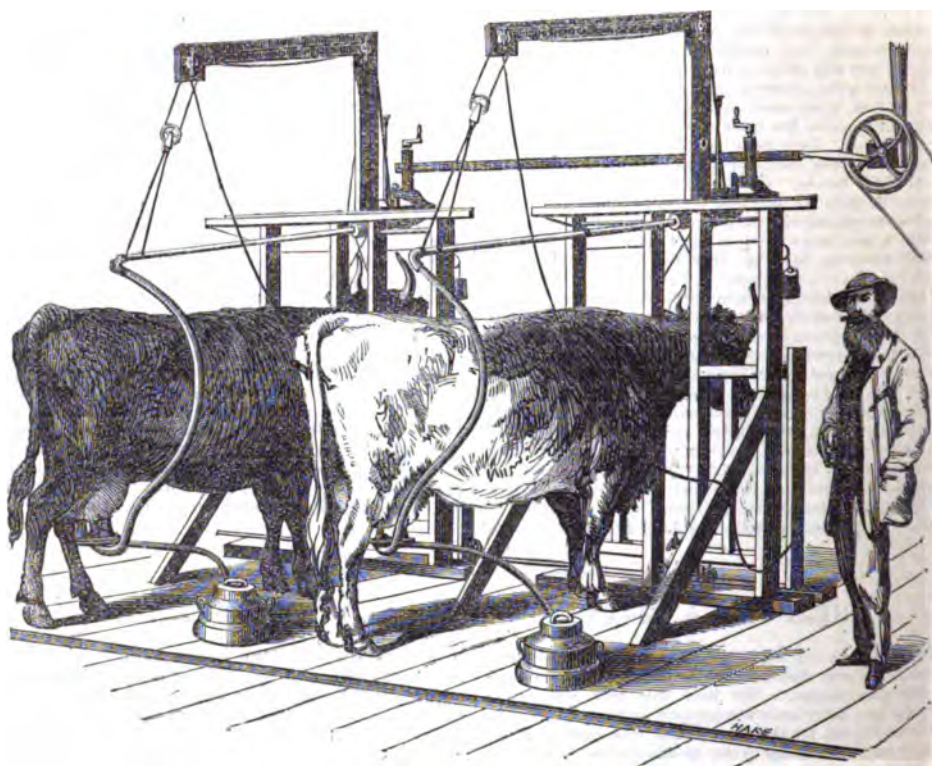
We think, therefore, that while it is a valuable and economical process to feed off the produce of the land by means of sheep, it will not pay to cart out much food to the field with a view to consuming it on the ground. The only case in which we can concede this to be allowable is where a small quantity of rich food is used for the purpose of supplementing a poorer kind.

The third system is where sheep are fed on the produce of the farm in the barnyard during winter, and the manure properly cared for, composted and spread over the land in the spring. It is well known that this system has been largely adopted by the well known wheat grower, John Johnston of Geneva, who has generally fattened about 500 sheep each winter, and thus obtained a large quantity of the very richest manure. That this is the true system for this country, on land of tolerable quality, we have no doubt; but on poor and worn-out land it will hardly pay as a first step. The great means for improving such lands in reasonable time is capital. Without this it is up-hill business; and if the farmer have abundance of capital he will not adopt the rude process which we are about to indicate as the best available method for reclaiming worn-out land without having recourse to thorough culture. It is a system which we have seen practised substantially as we describe it, and with very fair results.

ARATOR,

—American Country Gentleman.

COLVIN'S PATENT HYDRAULIC COW-MILKING MACHINE.



The above engraving illustrates the cow-milking machine of which we have heard so much of late. The Vermont Agricultural Society gave the machine a first premium, the Pennsylvania Society awarded it a grand medal, and the New England Society a diploma. Water is the agent used to work the milker, which operates on Nature's own plan of suction, applied to the teats of the cow. It is said that cows seem to enjoy the process much better than being milked by hand, as the arrangement is such that the imitation to the sucking of the calf is nearly complete. We take the following description from the "American Artizan":—

"Any ordinary churning power will work a half-dozen milkers, milking as many cows at once; and one man can attend them. One person can attend to the milking of dairies of from seventy to one hundred cows, getting all the milk, and saving it from dirt or waste. At the right of the machine is seen a pulley, to which motion is communicated, actuating the pumps placed, one for each cow, upon the framework which supports the stanchions. By means of a horizontal bar several of these pumps may be operated in unison, and a volume of water is thus worked back and forth in the pipes attached to the pumps.

At the other end of this pipe is the milker, which is attached to the cow's teats, and is supported in place by the pipe by which it is connected to the pump. The milker consists of four rubber tubes, which inclose and clasp the teats of the cow, and are connected to a vessel made by attaching two iron plates, and so formed that at the base of each tube which incloses the teat there is a globular-shaped reservoir, and placed between the plates and dividing the reservoir horizontally is a rubber diaphragm, which forms an elastic partition. All the space from the diaphragm to the pump and stanchion is filled with water, which remains there constantly, and when the pump is in motion this body of water oscillates in the tube, causing the rubber diaphragm to oscillate correspondingly to the motion of the pump; and at each motion from the diaphragm a vacuum is produced which draws the milk from the udder of the cow; and this milk, by means of proper valves, is discharged into a pipe and conducted to a can partly sunk in the floor, so as to be as much out of the way as may be, and so arranged that it is impossible to waste the milk or get dirt in it. The milkers are self-adjusting, will fit any cow, large or small, milking the four teats of the cow at the same time, and milking the three-teated cows as well as any."

ABORTION IN THE COW.

Abortion occurs oftener and more readily in the cow than in any other animal, and is one of the most vexatious classes of occurrences on a farm. A cow which has once been afflicted with it can never be depended on for further breeding, but would very probably miscarry on every future occasion as on the first; and hence, to prevent repeated disappointments and losses, she must be discarded from the cowhouse, and fattened for the butcher. The loss of her calf also occasions a blank in the number of live stock to be brought up during the season, and obliges the farmer to procure a young animal by purchase. Yet any farmer who happens to be tried with the occurrence must have a fair knowledge of the various causes of abortion, and must exercise considerable assiduity and skill in the use of preventives and remedies, in order to his probably escaping far worse consequences than the miscarriage of a single cow, and the necessity of purchasing a single calf.

Abortion sometimes becomes remarkably frequent, and even appears to assume an epizootic or epidemic character in particular districts, or upon particular farms. Chabert, in his "Veterinary Instructions," relates an instance of a farmer at Toury, who unwittingly introduced an abortive habit among his cows by the purchase of a strange cow at a fair—who witnessed the transmission of the habit, apparently from that one animal, to all his breeding cows, during the long period of thirty years—who could discover nothing in either the previous condition or the current treatment of any of his cows to indicate a predisposition to the habit—who sold off cows that had aborted, purchased seemingly sound cows in their stead, rebuilt his cowhouse, altered the whole economy of his live stock, repeatedly changed his bull, and tried every other expedient he could think of, to put an end to the pest, and who was baffled at every step, and tortured to see the abortive habit as prevalent and powerful as ever; until at last he sold his whole herd, and introduced an entirely different set of animals, altogether free from sympathy with any individual of his former set of cows. Both this instance and many other instances of a similar character seem, at first sight, to indicate the existence of some contagious or infectious virus in the cow's abortion; but when more carefully considered, they show the disorder to be propagated rather by the sympathies of a delicate smell, by the keen power of an irritable imagination, or by some other influence of an equally-subtle nature, and altogether peculiar to the cow. "A more common cause of sinking than any others," says Mr. Skellett, "and which is peculiar on the influence of this animal, is a disagreeable, nauseous smell. The cow is remarked to possess a very nice and delicate sense of smelling, to that degree that the sinking of one cow is apt, from this circumstance, to be communicated to a great number of the same herd; it has been often known to spread like an infectious disease, and great losses have been suffered by cow-feeders from the same." "Some," says Mr. Youatt, "have imagined abortion to be contagious. It is destructively propagated among cows; but this is probably to be explained on a different principle than that of contagion. It has been stated that the cow is an animal considerably imaginative, and highly irritable during the period of pregnancy. In abortion the fœtus is often putrid before it is discharged, and the placenta, or after-birth, rarely or never immediately follows it, but becomes decomposed, and, as it drops away in fragments, emits a peculiar and most noisome smell. This smell seems to be singularly annoying to the other cows; they sniff at it, and then run bellowing about. Some sympathetic influence is produced on their uterine organs, and in a few days a greater or less number of those that had pastured together likewise abort." These views, though not demonstrable, nor even tolerably certain, are very far from being unphilosophical; and as they possess quite as much force as any plausible theory, they ought to induce every farmer and cow-feeder to keep the cow-house of breeding-cows in a clean, sweet, and well-ventilated condition—to attend to the frequent and thorough cleansing, not only of the feeding-troughs, but of the urine-gutters; to protect the straw or other material for the litter of the cows from any stain of

blood or putridity; to cut off promptly and finally all vicinity of an aborted cow from other breeding animals of the cow-house; and to remove and inhume, with all speed, every vestige of the uterine discharge. Such practices, however, as the fumigation of the cow-house, the burning of feathers, tar, and sulphur, and the smearing of the parts of the cow with tar or fetid oils, as means of destroying smell and preventing contamination, ought either to be wholly avoided or very cautiously observed; for they have not been known, in even one instance, to produce a decidedly good effect, and they in all cases incur a hazard of creating the very evil which they are intended to avert. The transmission of the abortive habit in the seemingly-epizootic form is confessedly an obscure subject, possibly yet untraced to its real cause, and certainly ill-combated by any remedies yet devised; and hence every intelligent farmer will deal with it according to the best of his own judgment, and keep his mind open to any explanation of it which accident or observation may disclose.

The causes of the abortion of the cow in its more common forms of occurrence are better known. One of these causes is overfeeding. Cows when in an extravagantly high condition are in continual excitement, and constantly liable to inflammation of the uterus, and consequent abortion. M. Cruzel narrates that three cows out of ten, belonging to a certain farmer who consulted him, aborted in the first year of their breeding; that two of these three aborted also in the second year, whilst the third produced a feeble calf, which died on the second day; that a fourth of the ten cows aborted in the third year; that, on then being called in to examine and prescribe, he observed all the cows to be in an unnecessarily high condition, and drew blood from them all, and ordered a material reduction in the quantity of their food; and that, as a result of his treatment, their habit of abortion was completely removed. Another cause is the feeding of cows with bad hay. Mr. Lindsay states that no fewer than ten out of twenty-two cows of a respectable friend of his who kept a dairy aborted in one year; that other animals of his friend's stock contracted diseases, some fatal, and most of them disastrous, about the same period; and that both the abortions and the other diseases were clearly traceable to the unavoidable feeding of the cattle with very badly saved or very badly preserved hay. A third cause is the autumn-grazing of the cow upon fields thinly covered with hoar-frost. In Switzerland, abortion, though occurring at all seasons of the year, sets in with virulence, and becomes multiplied ten-fold, at the period when hoar-frost begins to appear on the fields. This cause of abortion, however, may be resolved into the more general one of feeding cows on any pasture which has a tendency to produce inflammatory disorders. Cattle of all kinds are exposed to serious injury, and sometimes incur palsy of the rumen or dangerous inflammation of the bowels, from feeding in autumn upon fields covered with hoar-frost; and whatever has a tendency to create general excitation in the bestial system is likely, during the pregnancy of the cow, to produce inflammation of the womb. A fourth cause is grazing upon pastures containing acrid plants, or upon the coarse, rank herbage of low, marshy, and woody grounds. This cause operates with great force also in producing the diseases called red-water. A fifth cause is the drinking of stagnant water. Mr. White mentions that three successive tenants of a farm near Berkeley, in Gloucestershire, relinquished possession in consequence of serious losses of cattle by abortion, red-water, and other diseases; that a fourth tenant suffered similar losses during five years, but eventually observed his cattle-pond to consist of stagnant water, impregnated with dung and urine, and suspected this to be the source of his cattle's disorders; and that he shut up his pond, procured a supply of good spring water by digging or boring, and was rewarded both by the disappearance of all disease from among his cows, and by a great improvement in the quality of the butter and cheese manufactured from their milk. A sixth cause is the drinking of water impregnated with iron. A writer in a German periodical states that, in 1822, twelve of his pregnant heifers, which drank from the ponds of water strongly impreg-

nated with iron, cast their calves; that in 1823 twelve other pregnant heifers drank from the same ponds, and likewise cast their calves; and that in 1824 ten cows which drank other water safely calved, while one cow which drank of the ferruginous water aborted. A seventh cause is feeding with hard unsucculent food, or occasioning cows to drink large quantities of water. Mr. White states that in January, 1712, all the cows of a farmer near Grandvilliers, in Picardy, miscarried; that they had been kept upon the straw of oats, wheat, and rye, and had been obliged to drink large quantities of bad water, in order to obtain sufficient nourishment from the straw; and that the causes of their miscarrying appeared to be the distension produced by the large quantities of water which they drank, and the injury sustained by the third stomach in expressing the fluid parts of the masticated mass. Mr. White also states that, in one year, sixteen out of twenty-eight cows in a dairy at Charentin miscarried; that during the preceding season, which had been unusually dry, the cows had been pastured in a muddy place, flooded by the Seine, and had generally stood up to the knees in muddy water, feeding on crow-foot, rushes, and other similar vegetation; and that some of them had, not long before, been brought from Lower Normandy, where they had suffered indigestion from feeding on lucerne, and had obtained relief by the operation of paunching. Mr. White likewise mentions that in 1789 all the cows in the parish of Beaulieu, near Mantes, miscarried; and states that all the land of that parish is very retentive of water, and that so much rain fell upon it in 1789 as repeatedly and for long periods to flood all the pastures, so that the grass became rank and sour. An eighth cause is the too great weight or some other unsuitable property of the bull. The use of a too heavy male is an error well understood among the breeders of sheep, and everywhere exploded; but it was formerly very common among the breeders of black cattle, and even yet is occasionally practised. Many instances might be named of the infliction of serious damage by a great overgrown bull, and an instance is mentioned by Mr. Wedge of a bull which caused a whole dairy of nearly twenty cows to abort in one year, which was sold to a neighbouring farmer, and caused all his cows also to abort, and which, on being re-purchased by the original owner, and again put to the trial, caused another set of cows to abort. A ninth cause is a cow's being afflicted with catarrh, or having a tendency to consumption. A cow long subject to catarrh rarely becomes pregnant, or, if she does, is very likely to cast her calf; and a cow which has become actually consumptive is almost certain to miscarry. A tenth cause is a cow's being subject to hoove, or flatulent distension of the stomach, or her being so placed while pregnant as to incur hoove. Any considerable distension of the rumen seems to press so heavily on the fetus as to injure or destroy it; and even an inconsiderable distension, if suddenly produced by change from poor to luxuriant food, often occasions abortion. Cows which have been half starved on meagre herbage during winter, and have been incautiously removed to a rich pasture in the spring, are in much hazard of miscarrying. A farmer whose dairy has hitherto been free from the mischiefs of abortion ought, on purchasing every new cow, to ascertain her previous habit of feeding, lest, by too sudden a change, she incur hoove, and acquire a habit of miscarrying. An eleventh cause is a costive or especially a relaxed condition of the bowels. "It must be observed," says Skellett, "that though it is necessary to preserve a free state of the bowels, a laxity of them will often produce abortion. Cows fed very much upon potatoes, and such other watery food, are very apt to sink, from their laxative effects. In the food of the cow at this time a proper medium should be observed, and it should consist of a due proportion of other vegetable matter mixed with fodder, so as the bowels may be kept regularly open, and no more." A twelfth cause is fright. Various instances have occurred of whole herds of cows having cast their calves in consequence of the terror of an extraordinary thunderstorm; and more than one instance may have been seen or heard of by almost every farmer, of individual cows having been driven to abortion by common frights. A thirteenth cause, and rather frequent one, is connection with the bull after the commencement of pregnancy. A fourteenth cause is injury from fatigue, from the blows of the cow-herd or of other persons, or from the contacts of other cows in season, or of unskillfully castrated oxen. A fifteenth cause is similar to one of those assigned for the apparently epizootic character which abortion occasionally

presents—the prevalence of any bad odour. "Of what nature that odour is which gives offence," says Skellett, "we cannot altogether be certain; but the author has remarked that its effects occur at one season more than at another, and particularly when the weather has been wet, and the cows have long been kept at grass. From this fact, it will appear that the smell is of a vegetable nature, and connected with their feeding at that time." Yet though so many causes of abortion have been distinctly ascertained, and may, with more or less frequency, be still found in operation, instances of abortion occur in the case both of individual cows and of whole herds for which no apparent cause can be assigned. The *Leipsic Agricultural Gazette* of March 22, 1777, states that "by an unheard-of fatality, the abortion of cows in that district was almost general, and that, after the most anxious research, no assignable cause for it could be discovered, nor would any medicine or medical treatment arrest the plague." In 1784, according to Chabert, all the cows and mares at Chalons, from cause or causes quite unknown, aborted; and in 1787, all the cows at Bournonville, though they had been in the cowhouse during the whole winter, and had been well taken care of, cast their calves.

The suitable preventives of abortion, in the case of individual cows, are distinctly suggested by the causes of the disorder, and need not be mentioned in detail. But as some of the causes are only occasional, and some can exist only in peculiar localities or under unusual circumstances, and some are liable to become obscurely as well as suddenly into operation, each farmer ought to determine to which of the several causes his particular farm or herd is most likely to be obnoxious, and to adopt his principal preventives against what he believes to be the most likely causes. Yet a few precautions or modes of protective treatment are desirable, and even necessary, on almost every farm; such as the regular feeding of the cows, the use of only good food and in moderate quantities, the affording of free access to good water, the cleanliness and perfect ventilation of the cow-house, the avoiding of all sudden exposure to considerable increase of heat or cold, the checking of all tendency to plethora or undue fullness of habit, the cautious but steady counteraction of any tendency toward emaciation, the adapting of particular varieties of food to the particular taste of the several animals, the gentle correction of any tendency toward either constipation or relaxation of the bowels, the prohibition of all rough usage on the part of the cow-herd, and the various little acts of consideration and kindness which are suggested to good feeling and sound judgment by a knowledge of the cow's delicate organism and comparatively tender susceptibilities. Only a brutal-minded cow-owner will pronounce such attentions to be too refined for a mere animal; only a lazy and sluggardly one will think them too troublesome for his observance; and only one of narrow knowledge, ill-trained principles, and wasteful economy will regard them as unnecessary to the remunerative working of the dairy.

The abortion of the cow takes place at various stages of pregnancy, from the half of the usual period of gestation to the end of the sixth, and even the end of the seventh month. The symptoms of its approach bear some resemblance to the indications of approaching parturition; but as they are often much feebler than these, and are usually not expected, and sometimes occur only under the observation of the cow-herd or other parties who may be implicated in causing them, they are exceedingly liable to escape the notice of the proprietor till they have become greatly aggravated and gone quite beyond the reach of remedy. In its earlier stages the cow loses appetite, ceases rumination, becomes dull and oppressed, suffers a slight enlargement of the abdomen, staggers a little in her walk, prolongs the period of reclining, and stands a comparatively long time motionless after rising; and in its later stages she loses the natural roundness of the abdomen, begins to express pain by moaning, exhibits a small, wiry, and intermittent pulse, shows laboriousness and slight convulsiveness of breathing, and discharges a yellow or red, glairy fluid from the vagina. The last of these symptoms is almost always decisive. But in certain cases, particularly when the abortion is caused by violence or extreme fatigue, the animal evinces such severity of suffering as cannot be mistaken; she ceases not only to ruminate, but to eat, paws the ground, rests her head on the manger while she is standing, or on her flank while she is lying, suffers either uterine hemorrhage or a spasmodic con-

traction of the uterus, and endures a succession of very violent throes for the expulsion of the fœtus.

The calf or fœtus, in the majority of cases, is expelled dead or putrid; and in other cases is so imperfect and feeble, that it very rarely lives. When an occasional case does occur of the expulsion of a well-formed living fœtus, or of delivery at a comparatively advanced stage of pregnancy, a doubt might probably arise as to whether it is properly an abortion or a parturition; for so considerable a variation exists in the actual period of healthy gestation among cows that M. Tessier observed, in 1,131 instances, a minimum of 240 days, a maximum of 321 days, and a consequent extreme difference of no less than 81 days. The effects of abortion upon the cow, even in their mildest form, but especially in bad cases, are often very serious. When the fœtus has been several days dead, and the uterus experiences considerable spasmodic action, and the labour is difficult, prolonged, and very painful, the cow is much more exhausted than in natural parturition; she acquires little or no appetite, and yields no milk; she appears feeble, wasted, and as if shrivelling into meagreness of bulk; she probably contracts some internal chronic disorder, or the elements of consumption, and she either drops away into death, or recovers with slowness and difficulty. Even when the abortion is of mild form, and entails no seemingly disastrous consequences, the cow loses much of her strength and character as a breeder; she will almost certainly not become pregnant on the next occasion of being in season; she may acquire a kind of nymphomania, and become a nuisance among a herd, and, as already stated, when she does again become pregnant, she is almost certain to have another abortion. Some persons assert, indeed, that the enfeeblement of the system is only temporary; that each succeeding abortion occurs at a later and later period of gestation; and that in the course of three or four years, the cow, if properly treated, will overcome her habit of abortion, and become a tolerably safe breeder. But no farmer who has a due regard for his own interest will keep an unprofitable animal for so long a period upon his premises; nor, for the sake of remote and contingent good, will he incur the serious hazard of spreading the abortive disorder among the rest of his breeding stock. The aborted cow, whenever she begins to recover, ought to be fattened and sold; and in any case in which there is an unconquerable reluctance to part with her, she ought, at all events, to be kept separate from her companions for at least two months, and if possible for ever.

If abortion be suspected, and the earlier symptoms of it observed, the evil may, in many cases, be averted. A cow which seems to be menaced with it ought to be instantly removed from the field to a comfortable shed or cow-house, away from the other cattle. If the fluid she discharges be only glairy, but not offensively smelled, and especially if any motion of the fœtus can be observed, the threatened abortion may possibly be averted. "The farmer," says Mr. Youatt, "should hasten to bleed her, and that copiously, in proportion to her age, size, and condition, and the state of excitation in which he may find her; and he should give a dose of physic immediately after the bleeding. The physic beginning to operate, he should administer half-a-drachm of opium and half-ounce of sweet spirit of nitre. Unless she is in a state of great debility he should avoid above all things 'the comfortable drink,' which some persons so strangely recommend, and

which the cow-leech would be almost sure to administer. He should allow nothing but gruel, and he should keep his patient as quiet as he can." The quantity of blood proper to be drawn from a cow in good condition may probably be five or six quarts; and the dose of physic suitable after bleeding may be either half a pound of Epsom salts, or three or four drachms of powdered aloes, or three or four ounces of castor oil, administered in a quart of gruel. But should the animal be in very poor condition, and her bad symptoms have been induced by exposure to cold, bleeding ought to be dispensed with, and the chief reliance placed upon gruel and an opiate. When the symptoms earliest observed are indicative of death in the fœtus, and especially when the fluid discharged by the cow has a decidedly offensive smell, abortion may be regarded as inevitable, and should on no account be attempted to be hindered, but by every fair and possible means be expedited. The cow, if much fever exist, ought to be bled; she may even, in some cases, receive with advantage "the comfortable drink," which cow-leeches so indiscriminately administer; and she ought in all other respects to be treated in the same manner as for parturition. The grand difficulty is not with the fœtus, but with the placenta or after-birth. The fœtus, instantly on being obtained, ought to be buried deep in some spot which no cow is likely ever to frequent; and the placenta, in consequence of being in an unprepared state to separate from the womb, and of the probability of its being so long retained as to contract putridity or corruption, ought to be the subject of prompt and assiduous concern. "A dose of physic," says Mr. Youatt, "should be given; the ergot of rye should be administered; the hand should be introduced, and an effort made, cautiously and gently, to detach the placenta; all violence, however, should be carefully avoided, for considerable and fatal hemorrhage may be speedily produced." Yet, whenever the placenta does not easily yield to ordinary appliances, or come away in the course of a few hours, or at the utmost a day, the farmer will do well to call in the aid of a veterinary surgeon. Skellett recommends, as a means of bringing off the placenta, to administer to the cow, when fasting, a drink containing 3 oz. of juniper berries, 2 oz. of bayberries, 1 oz. of saltpetre, 1 oz. of aniseed, $\frac{1}{2}$ oz. of gentian, $\frac{1}{2}$ oz. of myrrh, $\frac{1}{2}$ oz. of asafoetida, 1 quart of mild warm ale, and 1 quart of pennyroyal tea, and to repeat the dose daily till all the placenta be evacuated. But such compound and intricate drugging wants the simplicity of the best veterinary practice; and at all events ought scarcely to be practised or imitated by the farmer in indiscriminate cases, or without competent advice. Youatt, immediately after the passage which we have already quoted from him, says: "The parts of the cow should be well washed with a solution of the chloride of lime; and this should be injected up the vagina, and also given internally. In the meantime, and especially after the expulsion of the placenta, the cow-house should be well washed with the same solution." When abortion has once occurred on a farm, the breeding cows ought for a year or two to be watched and treated with unusual care; they ought to be sedulously protected from the various causes by which abortion is induced; they ought to be well fed, yet not suffered to become fat; and unless they happen to be very lean and weak, they ought, between the third and fourth months of every occasion of pregnancy, to be bled and mildly physicked.—*Rural Cyclopædia*.

COUNTY FINANCIAL BOARDS.

The question of Financial Boards is making way with the farmers. The Devon and Cornwall Chamber of Agriculture convened a public meeting at Plymouth on Monday week, in order to bring the question before the farmers drawn thither by the Fat Cattle Show. Mr. E. Brydges Williams, of St. Columb, presided, and avowed himself not only an advocate for the establishment of Financial Boards, but stated likewise that he had long been so, and was now glad to find that many of his friends who had been opposed to the movement were now altogether in favour of it. A resolution was adopted by the meeting that it considered taxation and representation ought to be co-ordinate, and that the present administration of county and police rates was opposed to that principle. Mr.

Pratt, who proposed this resolution, maintained that the administration of the county-rate was unconstitutional, because it was not based on the elective principle. An agriculturist, whom he named, had had his rates increased fifty pounds a year, which was equal to the subtraction of £1,000 from his working capital. The county-rate was jumbled up and collected with the poor-rate, so that "jobs were disguised;" the magistrates lent a willing ear to hungry lawyers, which would not be the case if the magistrates were elected into the county boards, where they would sit and administer the taxes along with a certain portion of representatives of the yeomanry. Mr. Rosevear argued that county boards would be productive of harmony. Both magistrates and yeomanry would unite to-

gether, and even if the result was not more economical, it would be at least more satisfactory, as they would at least know that what was spent they had voted for. Mr. Sleeman cited a bit of magisterial management that he thought would not live long under a financial board. Every prisoner who died in Dartmoor Prison was subjected to a coroner's inquest. There is a coroner at Ashburton, close to the Moor, and there is a coroner at Torrington, North Devon—a long way off. The Torrington coroner was preferred to the neighbouring officer—which certainly would not be the case if the worshipful justices had to pay the little bill for the business. Lunacy and Exminster were grounds that invited financial explorations. Rev. Mr. Eagles, who has stirred up the matter in Somerset, had been invited to attend the meeting; and he made an able speech. He said that the principle of the magistrates levying and applying the county-rate was not unconstitutional, because anciently the "magistrates were elected by the freeholders;" but in the time of Edward II. the Crown usurped the power, and representation ceased. In Ireland, however, the expenditure of the county-rate, or county cess as it was called, was made by elective bodies. Mr. James Buller, of Hillside, Newtown Abbot, delivered a short but stirring speech, in which he advocated elective bodies, and denounced ex officio appointments. There appeared to be something so debasing in this principle, that even bishops had been corrupted by it, and Ecclesiastical Commissioners, ex-officio, had been parties to and promoters of no end of jobbery. Mr. Soltan, who is an ex-officio, but has always proved himself a staunch advocate of economy, said that the question of county boards was of

first and vital importance to the agricultural interest. He was astonished at the ratepayers not having seen this before, and taken united action on it. Only recently he had proposed to the magistrates that they might save £1,800 a year by doing away with that useless body of Superintendents of Police. That proposition was pooh-poohed, but it would not have been had he been backed up by a financial board. If this £1,800 were saved they would be able, by increasing the pay of the police, to have a much more effective force, with a reduced expenditure. Would any town community submit to this state of things? Then why should the agricultural body! Let them only organise themselves in a Chamber of Agriculture, and they would soon save the subscription it would cost them. As things were managed now at Exeter, magistrates at a distance were discouraged from attending at Quarter Sessions. They found that magistrates residing near the city came as a compact body, and generally carried the measures they were in favour of. If county boards were in operation, Mr. Soltan said that he was satisfied they would select intelligent magistrates, along with their more intelligent neighbours, as members of such boards, and then the magistrates would feel that they were responsible, and that it was their duty to go to Exeter and see that things were properly done. What with increase of wages, and steady increase of local burthens, the rent-paying farmers will have enough to do to hold their own, and it behooves them to listen to men like Mr. Soltan, and use every fair and constitutional means to keep down expenditure. —*The Western Times.*

THE USE OF MANURE.

At a meeting of the Staindrop Farmers' Club, Mr. H. G. BOLAM, of Keveston, read the following paper:

Before treating of the definite question of manures, I think it will be advisable to glance for a moment at the general and special objects we have in view when applying manure to our land. Plants may be briefly said to consist of water, organic, and inorganic matter; the organic matter is that which is dissipated by the action of fire, and consists of carbon, hydrogen, oxygen, and a small portion of nitrogen (and which are derived from the atmosphere); whilst the inorganic or mineral constituents are those left after the plant has been burnt, and generally speaking contain potash, silica, lime, phosphoric acid, sulphuric acid, magnesia, chloride of sodium, peroxide of iron, &c., which, together with the greater part of the nitrogen the plant requires, are entirely extracted from the soil, and consequently that portion of the plant-formation we have chiefly to consider this evening. Now comes the question—Whence does the soil obtain these inorganic substances I have just enumerated as being extracted from it by the crops? All soils may be said, as a rule, to consist principally of fragments of rock in different stages of pulverization, only a very small portion indeed being reduced to such a fine powder as to be soluble, or available as food to the delicate organization of the plant, through the medium of water. The atmospheric influences are however constantly at work, slowly converting insoluble particles of soil to a soluble condition, and supplying it with a small quantity of ammonia. The more the land is exposed to the action of the weather, by means of drainage, ploughing, &c., so much the more rapidly does its restoration proceed; but this process of natural restoration does not keep pace with the continual drafts that are made on the resources of the soil by our crops, and it is therefore only by returning in the farmyard manure a part of what has been extracted, and by the use of artificial manures, that we can hope to sustain or increase its fertility. We cannot have a more striking instance of this than by watching the operations of our Transatlantic cousins on maiden land. In many cases the enterprising squatter has levelled tracts of the mighty forests, and raised year after year rich crops of grain, without returning anything to the soil, thinking that long before that fertile land could be exhausted, his fortune at least would be made. But already very many such have found out that their farms became impoverished, and incapable of growing grain without the aid of manure, long before their purses were filled; and they had

then to consider the best means of restoring and maintaining that fertility they had so wantonly exhausted. How much more therefore should we endeavour to restore and increase the fertility of our land, which we all know to have been under cultivation for very many centuries, and in many cases, it is to be feared, in almost as shortsighted a manner as the instance I have quoted. Before attempting to improve our land, we should carefully endeavour to ascertain the cause of its total or partial infertility, that we may be able to adopt the most effectual economical means possible. The causes of infertility in soils can be divided into three classes—viz.: 1. To the presence of some noxious substances, such as sulphate of iron, stagnant water, &c., or to the superabundance of some particular food-constituent of the plant, as in peaty and boggy land, where there is too great a preponderance of vegetable remains. 2nd. The absence of the food necessary for vegetable life, as in thin and shallow soils, or from the exhaustion consequent upon injudicious cultivation. 3rd. The bad mechanical texture of the soil, as when sandy soils are too loose and porous; or when clay soils are too close, heavy, and retentive, although containing abundantly all the food necessary for vegetation, and which only require mechanical improvement to become exceedingly fertile. The most important of all the mechanical means of improving land is by drainage, as not only is the presence of stagnant water a source of infertility, but it also very greatly impedes the effects of manure. But I will not say more on the subject of drainage (as I think so important a question should have the undivided attention of this Club on some future occasion), than to say that manuring wet and undrained land is a waste of time and money. Farmyard manure is undoubtedly the most natural, important, economical, and when properly prepared, the most perfect of all the materials we can rely upon for sustaining the fertility of the soil. I have not time this evening to dwell upon the natural and artificial foods for cattle, together with the various modes of preparing them, that tend most to the production of good manures; and I think this branch of the subject has had more attention by farmers generally than the actual manufacturing of this food after it has passed through the animal into the best form of manure, and it is therefore to the latter point that I will chiefly call your attention. The food of animals is divided into two portions, the first containing the non-nitrogenous compounds consumed in the lungs to produce that heat which animal life requires, and the other division

consisting of the nitrogenous principles of plants which furnish the materials requisite for the formation of blood, flesh, bone, &c., which is the smallest and choicest portion of all the vegetable substances used for food. These two compounds are generally called the "heat-giving" and "flesh-forming" principles of food. The former is returned through the lungs in breath to the atmosphere, whilst the latter, with the exception of the little carried off by the skin, is returned to the earth in the solid and fluid excrements. I will now call your attention to a fact which I think farmers are not sufficiently aware of—namely, that the urine of animals is decidedly the most valuable of their excrements; and yet I think I may truly say, as a general rule, of nothing is the farmer so wasteful and careless. We can hardly pass a manure-heap without seeing its liquid essence oozing out and gradually flowing away, or sinking into the ground, without the slightest effort being made to save such deliberate waste; and in very many instances the drains from fold-yards either discharge their valuable contents into a neighbouring pond, there to poison the water, and create an unhealthy and putrefying pool, or into ditches, to be carried thence to the nearest brook. Not only does the urine escape from yards and manure-heaps, where means are not taken to prevent it, but also when they are exposed to the air, rain gradually soaks through the manure, abstracting in its transit as much of the soluble portion as it can hold in solution; and this soluble portion, it must be borne in mind, is the very part most important to vegetation. The urine of animals contains nearly all the nitrogen originally present in their food, and the value of food as a nourishing material is chiefly dependent upon the amount of nitrogen it contains. It is also upon the amount of nitrogen present that the value of manure depends, as on decaying the nitrogen is turned into ammonia, that is to say, into one of the most important feeding materials of plants. For this reason the urine is more valuable than the solid excrement, the latter containing much less nitrogen. When urine is exposed to the atmosphere in its fluid condition, spontaneous decay takes place, by which the nitrogen is liberated in the form of volatile ammonia, and escapes into the air; but when it is mixed with and absorbed by the litter, no such loss takes place. The proportion of ammonia present in the urine of the horse or cow is nearly three times that in the solid excrement, and in the urine of the sheep nearly twice as much. Nothing varies more in value than farm-yard manure, made under different systems of feeding and management, and by animals of various species, ages, and sexes. Though neither the solid nor liquid excrement of animals, separately, contains all the constituents requisite for the food of plants; yet, when mixed together, and distributed through straw and other litter, the most complete and only perfect manure is formed. No farm-yard manure is so well made and valuable as that produced by feeding cattle in boxes, when nothing is lost by drainage, and all is well mixed and compressed by the treading of the animals. Farm-yard manure, or, as it is more commonly called, "dung," cannot be applied to the crops to the greatest advantage in a fresh state, as a considerable portion of the food constituents of plants that it contains only become soluble on decomposition, and it is for this reason that long dung has not such an immediate effect on vegetation as short dung, as a great part of the former only becomes available as food after it has decayed in the land, whilst in the latter this decay or fermentation has already taken place in the manure-heap. It is the compounds of the urine that first enter into that putrefaction which gradually takes place through the entire heap, but it is only in the hottest parts of the interior of the heap that combustion is rapid enough to separate the ammonia in a volatile state, and this is absorbed and retained by some of the compounds in the outer and cooler parts of the mass, before it can escape (to any extent) into the air and be lost; and therefore when the heap is left undisturbed during the process of fermentation, the only loss it sustains is by the fluid portion sinking to the bottom, and escaping thence, and when exposed to the air, by the rain soaking through, as I have described above; and for this reason the manure heap should be protected from the weather, and placed on a water-proof bottom, from which the liquid can only escape by drainage into a tank made for the purpose, and from which it can be pumped up and distributed over the heap from time to time. The only circumstance that renders it unnecessary to have the heap under cover, is when the quantity of litter used is so great

as to prevent fermentation by the absence of sufficient moisture, which the rain will then supply. But I think we never hear of that superabundance of straw in this district, and may therefore take it as a rule that all our manure should be covered in when heaped, drained as above-mentioned, and left to rot during fermentation; as it is only by opening and disturbing the mass, that appreciable loss of volatile ammonia takes place. When dung cannot be thus properly manufactured, I should recommend its being at once spread on to the land, and ploughed-in at the first opportunity; as, when spread out on the land, no loss of ammonia takes place, owing to the absence of fermentation; and whatever is washed through by rain, is retained in the soil till required, and the more bulky portion will decay when ploughed-in. Indeed, this system of spreading long dung on the land is often resorted to in very stiff clays; for, when ploughed-in, additional porosity and looseness are given to the soil. Whenever manure is applied to the land, it should be at once spread, not left in small heaps, as in the latter case not only does partial fermentation take place, with consequent loss of ammonia, but also the amount of soluble matter washed through by the rain cannot be retained by the surface-soil on which it rests, and consequently much soaks through into the subsoil and is lost. Artificial—or, in other words, special—manures differ from farmyard or general manure, inasmuch as they are applied for the purpose of adding to the land some particular group of the food-constituents of the crop we wish to raise, that are absent or not sufficiently abundant in the soil, and of which constituents few artificial manures contain more than a very few; whereas well-made dung contains every food constituent necessary for the growth of plants. It is therefore most important that farmers should be acquainted as much as possible with the chemical nature of their land, with the food-constituents that are required by different crops, and in what proportion, and with the fertilizing elements contained in the special manures they purpose using. As the number of artificial manures now made use of is so great, and our time this evening so limited, I think it will be advisable to confine my remarks to a certain number of the most important and most generally used manures, namely, the superphosphates, bone manures (which come under the head of phosphatic manures), and those known as ammoniacal or nitrogenous, namely, guano, nitrate of soda, and soot. Of the former class, bone manures are the most generally known, and of those I will first treat. About two-thirds of the weight of bones consist of mineral substances (mainly phosphate and carbonate of lime), whilst the remainder is made up of gelatine and fat. It is principally on the two former that their value as a manure depends; and their action in the soil is greatly retarded by the presence of the fatty matter which by its presence excludes the air and moisture, and prevents the decay of the gelatine or animal portion of the bone, for which reason it is almost useless to apply bones in a fresh condition. It is therefore the first consideration in the manufacture of bone manure to get rid of the fat, which is done by boiling; by which means the oily matter is extracted from the bone, and rises to the surface of the water, and is skimmed off and used for other purposes. The boiled bones are then crushed into different sizes, and sold as half and quarter-inch bones and bonedust, the latter being decidedly the best form of applying bone manure, particularly when used for the benefit of a crop we think especially requires it. The great drawback to the use of bones as a manure is the difficulty of reducing them to a soluble state; and by crushing them into small fragments, a greater surface is exposed to the action of the water and air, causing more rapid decay, and consequently conversion of the phosphates into a soluble condition, and of the animal matter into ammonia. The manner of applying bones, now coming into most general use, is in the form of superphosphate of lime, in which condition all the effects of bonedust are produced in a greater degree. It is made by mixing with bones that have been moistened with water from one-third to half their weight of sulphuric acid, when heat and effervescence take place, and the bones dissolve into a creamy fluid, which is allowed to dry for two or three days; it is then turned with a spade, and after drying for a few more days, forms a friable, moist gray powder. The great advantage this superphosphate of lime has over bone dust is that it contains a much greater proportion of soluble phosphate of lime, and also is in a drier, more uniform, and more completely pulverised condition, and can

therefore be more advantageously applied to the land. But the greatest advantage of superphosphate is that it can be made of equal or greater value as a manure from other combinations of phosphate of lime than bones, at a reduced cost, owing to many of these combinations of phosphate of lime being of no other use. The principal mineral sources from which superphosphate is now made are Cambridge coprolites, Sombrero, Spanish and German phosphates, with others of less value. Cambridge coprolites are found in layers near the surface of the land, in several parts of that and adjacent counties, and are supposed to be the fossil excrements of antediluvian animals. Sombrero phosphate comes from the West Indies, where the supply is most plentiful, and is supposed to consist of fossil guano. Superphosphate should be carefully pulverized, and mixed with fine ashes, and when applied to root crops should be within reach of the plant in its early state of vegetation, when it has the effect of hastening its growth, and enabling it to gain supplies of nitrogen from the atmosphere, and often, by producing rapid growth, saving it from destruction by the fly; 2 or 3 cwt. per acre will supply sufficient phosphoric acid and sulphuric acid to all the crops of a rotation of the ammoniacal and nitrogenous manures. Peruvian guano occupies the first position, and its efficacy is chiefly due to the large quantity of fixed ammonia it contains, 1 lb. of good Peruvian guano yielding as much ammonia as 24 lbs. of well-rotted farmyard manure. Guano is the dung of sea-fowls deposited on certain tropical islands, where, the rainfall being inconsiderable, it is accumulated in vast quantities, and undergoes a varying amount of fermentation and decay, and after spontaneous drying it assumes the condition in which it is imported. The guano from the islands on the coast of Peru is of the highest value, owing to the particularly favourable character of the climate. Guano is unfortunately liable to a great deal of adulteration, and sometimes cargoes are much damaged on the voyage by sea-water and other means, and in this condition can be bought at a low price, and often retailed to the farmer as genuine guano. Guano should be reduced to a fine powder, and mixed with two or three times its weight of salt or dry earth, to ensure a more even distribution over the land than could be done by using the guano alone, also preventing any of the plants being burnt by lumps of guano. Great advantage and a saving of expense may be gained by mixing guano with superphosphate, as although guano is the most valuable, and in effect the cheapest nitrogenous manure, it does not contain sufficient available phosphates in proportion to the nitrogen present, and therefore its practical effect will be increased by adding soluble phosphate in the form of superphosphate, in the following proportions (and it must be remembered that superphosphates can be had at little more than half the price of guano):

For wheat, on strong soil,	$\frac{1}{2}$ guano to	$\frac{1}{2}$ superphosphate.
Do. light do.	...	do.
Root crops	...	do.

the latter also forming a valuable barley and grass manure. Nitrate of soda is principally used as a top-dressing for wheat, of which it considerably increases the yield; but, owing to the absence of phosphates, it is not in the end so good a top-dressing as guano and other manures containing phosphates, which important food-constituent has to be furnished by the soil when nitrate of soda is used, consequently leaving the land after a crop in a worse condition than after guano. Nitrate of soda is considered more of a stimulant to enable crops to assimilate what the soil can supply than a substantial addition of plant food. Not more than 1 or $1\frac{1}{2}$ cwt. should be used per acre, when care must be taken to ensure its equal distribution in the land; and to this subject the remarks I made on preparing guano apply with equal force. Of the less costly ammoniacal manures, soot is found in practice to be a very useful top-dressing, particularly for wheat. Coal contains nitrogen in organic combinations, which is given off in the form of ammonia on the coal being burnt; and the ammonia is fixed and retained in the soot by sulphurous acid, which is also given off by burning coal. Soot also contains sulphate of lime, which adds to its fertilising effect. In procuring artificial manures the greatest caution should be used in selecting a genuine article, as one and all are open to a great amount of adulteration; the best plan being to deal with manufacturers of well-known respectability who will guarantee their manures to be of a certain composition, which can be tested by analysis. I have not mentioned one of the most important fertilizers we possess—

viz., lime—as it hardly comes under the head of manures, and will, I hope, form the subject for discussion on another evening.

Mr. BELL said farmyard-manure did not contain all the elements wanted, therefore other manures should be added. He did not agree with all that was said about bones; they should use half-inch bones on gravelly soils (reaped sooner), but would dissolve them on clay soils; because turnips grew longer with dissolved bones than with superphosphate. He thought much might be added to the manure heap by collecting road-scraps, taking down hedge-banks, &c.; but did not much approve of mixing lime therewith. Thought lime better employed by itself; and the composts were not allowed to remain long enough in the heap ere being used.

Mr. HOLBORN thought manure should be covered, and the liquid out of the tank put upon the heap on all occasions.

Mr. J. ROBINSON concurred about the value of liquid manure. It paid to lay on; but the yards must all be spouted, as it would not do otherwise. It answered well on grass; he himself had improved some to the extent of 6s. to 7s. per acre.

Mr. J. JACKSON thought liquid manure paid to put on land. He knew a field that never had anything else, and it had very much improved. The liquid was carried out in pails; and, of course, it was only a small field.

Mr. SUTTON disagreed about fermenting manure; better put on raw, and plough-in in a rough state. Nothing was added by fermentation, but part lost through evaporation; but when ploughed-in there was no loss. Did not approve of bones in a raw state; they were better when dissolved. Bolivian guano was in a finer state than dissolved bones, and therefore sooner came to profit, as the insoluble part in the guano was sooner in a fit state to be taken up than that in the bones.

Mr. HAWDON thought, if the buildings were spouted, the liquid would be absorbed by the straw. He considered that manure should be put into a heap, as it got better amalgamated therein by turning. He would put raw manure on gravel—not clay—land, as on the latter it would not dissolve, and the turnips would not braid so well. For portable manures he considered bones the best—on light land, undissolved; and the harder boiled the better. The bones from South America, that had been exposed to the sun, he considered better than the raw ones, as the oil and flesh were good for nothing. In his opinion superphosphates were not so good as they were, and could not be depended on; but he blamed the manufacturers for that. He would recommend guano for clay, not bones.

Mr. W. T. SCARTH said: Farm-yard manure was of the greatest consequence; but some should not be called such. When made from cattle eating oilcake, then it was worthy of the name; but that made in open yards was little better than straw. The liquid should be preserved. He would lay decomposed manure on the land, if gravelly. The chemical effect of heat caused the insoluble to be soluble, therefore better fermented than raw. He tried an experiment after Professor Voelcker's lectures. He laid manure (made under cover) on the land, and ploughed it in. He also used the same description of manure, but did not plough it in. In January he had it carefully spread, and when the turnips were pulled, gave the greatest credit to that which was not ploughed in. Liquid manure, when applied with judgment, gave wonderful results. He had seen Mr. Mechi's process, which gave brilliant crops. His manure was nearly all turned into a liquid state, and flushed on to his land. Mr. Morton had obtained, by the use of liquid manure, on poor sandy land, he believed, 60 to 60 tons per acre green kail. He would collect all the vegetable matter he could, to increase the manure; but liked mixing lime with it. Guano was a good dressing for green crops, nothing better. Bones were excellent, but they should be boiled to get rid of the fat and oil. On clays in Cheshire, bones, as a top-dressing, both for immediate profit and for lasting, had answered wonderfully well. Soot was a good and cheap manure for dressing green crops, as he himself had experienced.

Mr. GRAHAM had tried nitrate of soda, with good effect, on oats and grass, but would not apply it to barley, and doubted any good on wheat. Used one-third guano to two-thirds superphosphate for turnips. He had a friend in the room who had always spoken very highly of soot for grass. Always deal with good manufacturers of artificial manures.

The CHAIRMAN, Mr. T. F. South, thought an impervious bottom should be made to place the manure on. Raw bones, in Cheshire, had acted in a wonderful manner for 30 years, applied to the surface; but they should be well crushed.

Mr. BOLAM, in reply, said: Although the bottom for placing a manure heap should be impervious, the liquid should be carried from it to a tank, and then pumped into it again. As to the application of raw bones in Cheshire, he thought twenty years a long time before they came fully into use, as it was a long period to pay interest for them. Mr. Bell had used

bones on a field which, at 2s. 6d. per bushel, would, at 16 bushels per acre, be 40s. Now he thought that expense of superphosphate, applied at twice, would bring in a better return. Farm-yard manure was the stuff, and add what they liked to increase it. Bolivian guano, he fancied, could not contain so much insoluble matter as superphosphate. On gravelly soils the manure was sooner washed away. Short dung could be more evenly applied than long. Urine was best used by mixing it with the manure, but he was sorry to say much of it was wasted.

LANDLORD AND TENANT IN SCOTLAND.

The following discussion on this subject took place at the annual dinner of the Logie and Leacroft Farmers' Club:—

Mr. PRAR, Manor, said: Looking at the subject for discussion in the light that the owner and occupier of the soil should go mutually hand-in-hand for the developing of its resources to the utmost, the question becomes one of great interest and extent, not only to those who are more immediately concerned with the results, but to the country at large. At all times the cultivation of the soil has been of the utmost importance, but at no time in history have calls been so urgently pressed as at present for getting it to produce the amplest harvests. The demands of the population for a number of years back have overtaken the productive powers of the soil, and more recently for some years it has in general been found that the corn produce is barely remunerative to the grower. It seems, therefore, to be highly proper to refer to the duties of landlord and tenant in order to see that the soil they respectively own and occupy is producing the best possible results, and also to point out, with a view to removal, whatever impediments may be in the way of increasing the desired returns. Liberality, frankness, and goodwill, to which may be added the high moral maxims of "Live and let live," "Bear and forbear," are acknowledged to sum up the relationship that should subsist between the owner and occupier; but as either party can merit these titles only by the performance of the important and especial duties devolving upon them, it may not be altogether unsuitable or inopportune to take a practical view of their respective positions. The one class of duties may be termed the permanent improvements of the property, which includes the various buildings necessary for the farm, fencing, and draining the lands. These form the primary operations, and are indispensable to profitable farming. The other class may be said to begin where those leave off, and include stocking the farm, seeding and manuring it, and cultivation. The first-mentioned duties it seems proper the proprietor should be at the expense of. When constructed and completed they become heritable property, which cannot be removed, and are applicable only to the ground on which the work is performed. Their permanency of duration, too, when properly constructed, extends over two or three nineteen years' leases, and it ought to be out of the question for a tenant to erect the houses and other enduring improvements, and the proprietor at the beginning of a new tack charge him additional rent for his own erection. It enables the tenant, also, with the same capital to raise a greater produce, and consequently to pay a greater rent. Instead, however, of the proprietor of the land performing these lasting improvements which so readily suggest themselves to us as being his duty, a not inconsiderable portion falls to be performed by the occupying tenant. On occasion of the erection of new buildings he has, in general at least, to perform the carriages—a very inconvenient and expensive task for an improving tenant at the beginning of a lease. In draining, it is seldom done at the expense of the proprietor: in a good many instances he stands about one-half of the expense; but these operations are chiefly performed by the proprietor supplying the pipes only, the tenant paying an annual interest thereon during all the years of his occupancy, besides the cutting, carting, and everything else connected therewith being at his own cost; and not unfrequently he is saddled with the whole expense. The cost of erecting fences is generally apportioned about the same way; the consequence of all which is, these operations are too often done on a temporary scale or in a superficial manner, just sufficient to last the

season, not resulting in increasing the value of the property at the termination of the lease, and very often, by swallowing up part of the tenant's capital, meant to have been applied in raising crops, prevent him from farming the land to advantage during its currency. The tenants, on the other hand, should be at the expense of stocking and cultivating as before mentioned. Although we cannot believe he is so remiss as the landlord, he not unfrequently comes far short in his performances. There are some, whose conduct is reprehensible, who, to get in, offer too much rent, and then throw themselves on the indulgence and leniency of their landlords, instead of their own self-reliance. This, in the long run, proves injurious to both parties, and, as might be expected, leads to the poorest results. A tenant should offer no more rent than he considers he will be able, out of the proceeds of the farm, to pay, and rather use his exertions in enriching the soil for producing heavier and more valuable crops, in improving the breed and increasing the value of his stock, supplying himself with the most approved implements and machinery for economising the expense and abridging the time for preparing the soil and for reaping its harvest, and by all the other means or appliances in his power for making the most of anything. At the same time, as farming in general is found to be a more interesting than lucrative occupation, having a variable climate and many other adverse things to contend with, it is certainly for the happiness of the tenant that he be under a judicious and liberal landlord. It appears to be a great drawback for advancing the science of agriculture, the peculiarity about Scotch landlords especially, in leaving their property too much to take care of itself, who disregard developing sufficiently its resources; and yet, for the small return it yields, they loudly and with truth complain. In the rise and progress of every commercial business that has attained eminence, the greatest amount of capital has been employed, and the utmost diligence continually exercised, for producing the beneficial results. The cultivation of the soil forms no exception to the rule; and before it can be said that land has attained the maximum state of fertility, landlords require not only to employ more capital, but they must be more in earnest along with the tenant, otherwise the accomplishment of these desirable results will in most cases be very imperfectly attained. It is sincerely expected that the alterations proposed to be made on the law of hypothec during the present session of Parliament will be of such a nature as to interest landlords more in the selection of their tenantry, and in giving a preference to those who offer a fair rent, and have education, energy, and capital, for planning and carrying out the various departments to the greatest advantage; the effect of which would be a higher and more advantageous state of farming, and more business intercourse with and good-will towards each other. That increased capital on the part of the landlord, properly applied, would prove a good investment, and the facilities thereby afforded to the tenant for acting his part to better advantage would likewise prove fairly remunerative, there can be little doubt, it being those estates on which least is done which give the smallest returns, and the worst farming that leads quickest to poverty. In referring to the many conditions contained in the lease, this feature of the question stands much in want of reform. It is evident from the amount of writing about these restrictions and reservations, and the number of lawsuits arising therefrom, that general dissatisfaction exists regarding them. This is not much to be wondered at when we take into consideration the fact that almost the same forms and clauses they contained 70 years ago and more

are embodied in them still, and if the plan or system of farming laid down at that remote period be deviated from the same fines and penalties are incurred. The conditions of lease may be considered as a private agreement between the two parties, which may be drawn out as they consider best. This to some extent is the case; but their form has got such a hold by their use and wont clauses that, so long as there is more demand for farms than farmers, they appear to fall under the category of those things that require to be publicly discussed before a remedy can be got. It is true that in most cases these clauses are allowed to lie dormant, and the fines following their non-observance seldom heard of; nevertheless their insertion gives the owner a sort of power and patronage over the occupier he has no right to possess, and permits him to better his calling in a great measure only by sufferance. This ought not to be. Leases ought, like other commercial transactions, to impose no unnecessary restrictions, but rather should be framed in such a way as to allow the tenant to make the most of his bargain consistent with the land not being left in a deteriorated state at the end of the lease. This the proprietor can sufficiently guard himself against by prescribing the course of cropping for the three last years only. More liberty does not increase the risk of farming ill, of which the clauses in leases at present seem so much to guard against, there being no inducement to do so, simply because it does not pay. Self-interest is entirely on the side of high or liberal farming alike for landlord and tenant. Our leases generally extend to nineteen years—which is considered a very judicious clause, in affording time for making improvements on the land, and for reaping the benefit of them, and likewise for introducing the sort of stock best suited for the place, and opportunity for realizing the results of the selections made. The clauses most objectionable are those specifying in detail the kind of crops to be grown in each year during the lease, the amount of seed that must be sown per acre, the quantity and kind of manure to be applied, the portion of the produce allowed to be sold off the farm, and the portion to be kept and consumed on the premises, and the penalties following thereon, when deviating or altering from the prescribed course. All this is most vexatious to the intelligent agriculturist, and it is high time it were redressed. There are besides a number of minor feudal clauses conferring small perquisites on the landlords, in themselves of little intrinsic value, but often irksome for the tenant to perform, that should be done away with. In regard to the cropping clauses, it is next to impossible sometimes, as when we have an adverse spring to contend with, to get sown to any advantage the particular crop ordered. On the heavy clay soils, there have been repeated failures of crops for some seasons back for want of a good seed-time. It is, besides, surely an unwise if not unjust proceeding to be bound to grow any particular kind of crop year after year, whether it is selling at a premium or discount in the market. As tenants ought to be the best judges of these details, so I think they should be allowed to exercise their judgment more in producing whatever kind of crop they find pays best. The clause precluding the sale of part of the produce seems to be unnecessary, and often hurtful. Take straw, for instance, one of the prohibited articles, the market price of which at present is 8d. per stone (of 22lbs.), while its value, to be converted into manure on the farm, is found both chemically and practically barely worth 3d. per stone—thus causing, after deducting 2d. per stone for carrying it to the market, and the carriage of dung brought back, a loss of 100 per cent. on that item alone. The common fault found with the manure made in the clay lands in this quarter is its poor quality. The great bulk put on the land does not sufficiently tell on the crops following, because its composition is made up too much of rotten straw, and too little of rich animal manure. Were farmers in the districts where the land is about all under crops, and where it is not advisable to grow great breadths of turnips, allowed to sell more of their surplus straw, and buy with the proceeds dung and cake, the advantages would be great. £30 worth of the straw converted into manure on the farm would, by being sold in the market, realize £30 worth of superior dung in return, and £30 worth of cake for cattle beside. It may be said there are some who would take advantage of this privilege, and exhaust the soil by putting the £60 in their pocket, but I think this would be a penny wise and pound foolish course to practise, and only exceptional persons would do it. There is another thing that farmers are getting a greater an-

tipathy to every year, namely, the game-laws, and making them, as it is called, the preservers of the game. So long as proprietors kept a fair quantity of game on the land for sport in the season, comparatively few complaints were made; but of late years, on many estates, the quantity has been greatly increased—not, it is currently said, for sport, but for the avowed purpose of bringing additional revenue out of the lands. To such an extent tenants consider they have been aggrieved by the proprietors breaking faith with this clause, and their crops damaged from what they formerly were, that they demand now, not concessions of these laws only, but the entire abolishing of the statute, as the only hope of remedying the evil. As nobody can preserve game, or keep rookeries, without doing injury and hurt to their neighbour, I think these things ought to be considered as a nuisance, and put down by law accordingly. Our leases, besides telling us what to do, also point out what is to be avoided. Nothing, according to them, seems half so bad for the land as the growing of two white crops in succession. This, by practical men, is now considered not to be against the rules of good husbandry, and is occasionally practised by the best farmers, in the best-farmed districts. It is found to be almost a certain remedy for the growth of clover. Shallow ploughing, and letting the land increase with weeds, seems a worse evil, not only for the present, but also for the prospective value of the land. I therefore think—as no rule can be laid down to force a bad farmer to become a good cultivator, and our stereotyped clauses give no scope for a college education, and as the future value of the soil mainly depends on the kind of management practised by the occupier—instead of encompassing a farmer's path with so many burdens and disadvantages to which no other class of capitalists are subjected, it would be better for proprietors to obtain an efficient and trustworthy tenant, and each faithfully to perform to the other their respective parts of the premises. By doing so their mutual self-interest might not only be promoted, but our national wealth, prosperity, and happiness would be increased.

Mr. McLAREN, Spittal, said: The connection existing between landlord and tenant is a matter of far greater importance than at first sight would appear. The time has passed away when the landlord looked upon his tenantry as common serfs or retainers, over whom he exercised supreme power, even amounting to life and death. In our day the connection between landlord and tenant ought to be looked at as a co-partnership—the landlord giving the land (or the raw material so to speak), and expending the necessary sunk capital as his part; and the tenant, his partner in the business of developing the resources of the soil, brings skill, industry, enterprise, and funds, as his. Looking at the relation of these parties in this light, we would expect to find them treating each other in a spirit of friendship, and not, as we too often see, the landlord on the one hand tying down the tenant by restrictions and conditions, which never made a bad tenant a good one, but has often soured and disappointed a good tenant, and fettered him in his operations—nay, even casting him aside altogether, or compelling him to treat the land niggardly, and so making a loss to himself and the community. Many things might be brought forward to show where the tenant is defrauded of his fair and equitable share of this co-partnership. I only cite one, and that is over-preserving of game. It is a well-ascertained fact that every full-grown hare or rabbit eats and destroys from ten to twenty times its own market-value of the tenant's crop. I, along with many others, had the mortification of seeing two heavy cartloads of these vermin emptied down upon the Stirling street on a market-day, some three months ago, and, on inquiry, learned they had all come off one estate in the county, and that not a very large one either. Now, suppose these loads to contain a thousand head, and take an average of 1s. each as their price, nets to the landlord £60. But we must stop here to inquire what they cost his co-partner. Taking the medium between ten and twenty—namely, fifteen times—their selling price, gives the nice little sum of £750 out of the pocket of the one partner, that the other may be privileged to pocket the paltry sum of £60. These things ought not to be.

Mr. HENDERSON (Craigarnhall): The relation between landlord and tenant is a subject which has of late years engrossed the attention of those engaged in agricultural pursuits, and has been a theme for those who wrote on matters relating to agriculture. Like all subjects of the kind, much

difference of opinion seems to exist. That it is not altogether what it should be, no one can deny; but in this, however, all apparently agree, that it is the kindly and agreeable feeling which has hitherto subsisted between the parties—to the "give and take;" to the "live and let live" principle—that has placed agriculture in the advanced state we now see it. On the contrary, we see that on estates where strife and discord have reigned agriculture is far behind. It must be admitted that it is to be attributed to the good understanding between the parties that we see the country so much improved, to the great profit of proprietors, and to the benefit of the nation at large, from the great quantity of extra food now produced, especially in that of butcher meat, which nowhere can be had in quality and quantity like that produced at home. Our artisans of the present day are now enjoying a luxury which the highest of the land could not enjoy a hundred years ago. In the article of wool also, a kind almost unknown sixty years ago is now sent into the market in abundance, the manufacture of which now adds so much to the wealth of the nation. We see that it is altogether owing to the introduction of the turnip into field culture that has so immensely increased the supply of beef, and that it is to the introduction of sheep husbandry on viable farms, consequent on the culture of the turnip, that we are indebted for such a supply of mutton and wool, and that of the best kinds. Turnips being looked on as a scourging crop when introduced about the end of last century, landlords had some doubts about allowing their introduction. Tenants, however, were allowed to go on bit by bit, more through the kindness of the landlord than any right they had to do so from their leases. Very few leases in this neighbourhood before the beginning of the present century gave a right to the tenant to sow a full breadth of turnip. Had leases been strictly followed, agriculture would have made slow progress indeed, only one move in nineteen years at the beginning of a new lease. We find the tenant, where he was bound to the old out-and-in-field course of cropping, with his oats after his oats on his out-field until they would grow no longer, and his oats, peas, and bere courses for in-field, doing a great stroke of business in the turnip line, and that with a penalty of so much an acre on his head for every acre of turnips grown. It is curious to observe how land rose in value about the end of last century, principally through the introduction of a crop negatively forbid by the landlords. One farm with which I am acquainted, and have seen leases of it for 170 years back, shows how land has progressed in value. Previous to 1750 this farm was let at a Scots money rent of about 2s. 1d. sterling an acre; and at this time it was a good turnip soil, and dry; from 1750 to 1769 it was rented at about 3s. 5d.; from 1769 to 1788 it was about 8s. 4d. (during the currency of this lease turnip culture was introduced); and when it expired, 15s. an acre was the rent up to 1804, when it rose to 45s., at which it has been about ever since. Sheep husbandry seems to have been in no better favour with proprietors than the turnip crop, for we find that sheep were one of the things then excluded; and one excentric old gentleman, in a lease dated 1780, although allowing a small breadth of turnip, sheep, goats, swine, asses, and Harry Mushet were strictly forbid. This Harry was a degenerate branch of a respectable family, who, for want of a better calling, had betaken himself to horse-coping and dealing in asses: hence the cause of his exclusion. It would appear that it was a good way into the present century before that tenants in general had full power to crop with turnip; and up to the present time farmers of heavy clay soils are growing turnip on what they are strictly bound to have in fallow. We see, also, that it was owing to the leniency of the landlord that draining was introduced, and that the tenant went illegally beyond his depth in doing so. It is no doubt to draining and turnip culture that we must attribute the great success that has attended agriculture. The one without the other, in many cases, would be useless; and it is to the two combined that so many thousands of acres have been brought into a state of cultivation—so many more thousands of quarters of grain raised, and so many more thousands of sheep and cattle kept, than what was before. What may be called the legal relation between landlord and tenant—this dry, hard, matter-of-fact sort of thing, called a lease or tack—this connecting-link, or, to use a more modern phraseology, the coupling-chain which unites the parties—this complicated and intricate piece of workmanship, having a screw to work the

tenant up to performance, and a screw to fix him down to limitations, and an Archimedian screw to separate the parties at the end of the journey—this wonderful document seems to have been handed down to posterity, by patriarchs in agriculture, but lengthened and absurdified by the past and present generations. Lawyers tell us that many of these leases are the most interminable and incongruous piece of nonsense that disgraces our language—so one-sided, so lengthened and prolix, so ambiguous and abstruse, so vague and evasive, that they marvel that men can be found insane enough to put their names to them. How then should restrictions in leases, that have been a drag on the progress of agriculture so long, be still continued, and worse clauses be still added, consented to, and ainged? We are told that such documents would pass with no other class but farmers. This well bears out what has often been said, that all the ability goes to other professions and to cities, and leave only those of minor qualifications to cultivate the soil. That farmers display a great want of forethought and knowledge of business in putting their names to such leases, no one can deny. That tenure of land, if we are to judge from the lease, is in a most unsatisfactory state, most men will allow; which of the parties is most to blame is not easily found out; that it presses with most force on the tenant is quite apparent. The demand for land—the demand being greater than the supply—may have induced many to go into agreements fraught with the worst results. As long as landlords get men willing to subscribe such contracts, so long will they continue adding clause to clause. The land of the country is much monopolized by the nobility, through the working of the law of entail, and this is given as a reason why leases have got so much into that dictative and domineering cast. Twelve noblemen hold half the land of Scotland, and it will be easy for them to enter into any union that may suit themselves, besides having the power to sit and legislate for the good of agriculture.

Mr. CHEISTIE, of Cottaugh, said: After so much has been said, and so well said, scarcely anything remains to be added. We have already heard to-night that no lease, however stringent, can make a bad farmer a good one. Some of the leases, and quotations from others, that I have seen, are more fitted to make a good farmer a bad one, or, at least, to prevent a tenant of good intentions from carrying these into effect. Many of their clauses are so indefinite as not to be intelligible; others unsuitable to modern agriculture; many of them despotic; and some of them so antiquated that the originals of them seem likely to have been found in the archives of Noah's Ark. They are often so one-sided that the only use they are for is to bind the goods and chattels of the vassals to their lords—to feed their vermin during their currency, and when the winding-up comes on, nothing over.

NORFOLK AGRICULTURAL SOCIETY.—The annual meeting of this society was held at Norwich on Dec. 30, Col. Fitzroy in the chair. The abstract of accounts, read by the secretary (Mr. J. Cross), showed that the total receipts of 1867—including £350 brought forward from 1866—had been £1,811, of which £617 was derived from annual subscriptions and £511 from receipts at the gates on the days of the Fakenham exhibition. The expenditure of the year had been £1,609, leaving a balance of £204 in hand. The payments in cash premiums for stock at the show were £704. On the motion of the Rev. T. L. Fellowes, Mr. Tyssen Amhurst, of Diddington Hall, was requested to act as President for the ensuing year. All the retiring members of the committee were re-elected with the exception of Mr. E. Beck, who had not attended any meeting during the year. There were two other members to be appointed on the committee in the room of Mr. Etheridge and Mr. J. Smith, deceased. The three vacancies were filled up by the appointment of Mr. E. Bunting, the Rev. Randall Burroughs, and Mr. I. Everitt. Mr. E. C. Bailey was re-elected honorary director, and Mr. J. Cross secretary. Mr. T. Brown proposed that the society should hold its exhibition for 1868 at Downham Market, where he said every accommodation would be afforded. In the course of a lengthened discussion it appeared that the members of the society would probably have to dine in a marquee, as the Corn Exchange at Downham would not hold more than 100 persons, while the Fakenham dinner was attended by more than 200. It was remarked amid some laughter that, in the event of the marquee scheme failing, the members of the society might

perhaps go to the workhouse and dine there. Mr. I. Everitt said this would be very bad taste, and would bring all the radical papers about the society. Mr. Overman said it would not, perhaps, be very pleasant to dine in a marquee during a thunderstorm, and he would suggest that the society should go to Diss. To this it was objected that no invitation from Diss had been received. Eventually it was agreed that the next

exhibition should be held at Downham, on the Thursday and Friday of the third week in June. On the motion of Mr. C. S. Read, M.P., Mr. Hugh Aylmer, Mr. J. Everitt, Mr. T. Chambers, and Mr. T. Brown were appointed a committee to report upon the accommodation, facilities, and encouragement which Downham was likely to afford in connection with the meeting.

AGRICULTURAL LABOURERS.

At the East Penwith Agricultural Exchange, a paper on "The defects in the position, efficiency, and character of Agricultural Labourers," was read by Mr. JOSEPH VIVIAN, jun., of Heskadinick Farm, who, after a few prefatory remarks, said: "The object of this paper is to induce a discussion having a practical bearing on the subject under consideration, rather than to give an elaborate treatise, which would be out of place here. The importance of the matter made choices of on the present occasion, together with some of the means from which an improvement may be anticipated, will, I presume, need little recommendation from me. Whilst a great and universally acknowledged change has of late years taken place in the position of farmers who have become many of them, men of large capital and possessed of far superior stock and agricultural machinery to those owned by their predecessors, and who travel, and lay out large sums of money to obtain still further improvements, and who are able to give their sons an education to fit them to mix in general society; and whilst tens of thousands are annually spent to stimulate improvement in the breed of stock, or the production of more efficient implements of husbandry, it is to be regretted that little, if anything, has been done to better the moral and material welfare of the labourer, without whose industry our large farms, well bred stock, and costly implements, would be of small avail. It is no light consideration for the owner of extensive landed property especially, but also for the tenant and practical farmer, whether or not the labourer is treated justly and fairly in point of remuneration for work, and whether much that might, without surmounting any extraordinary difficulty, be done for his comfort and moral welfare, is accomplished or attempted. We will proceed to inquire if sufficient inducement is offered to the class, as a rule, to remain in their present employment. Twelve shillings a week and a cottage with two or three rooms scantily furnished, and too often a prospect of finishing his days in the workhouse, are the husbandman's reward, and little distinction is made for superior skill, integrity, or length of services. Is this state of things a just one? Or will anyone say there is no call for improvement? On the contrary, there can scarcely be a doubt that, unless an important change is effected through the agency of employers, or by the determination of the men themselves, farm labourers will not only become less in numbers, but also inferior in intelligence and usefulness. To meet this difficulty I would recommend, in the first place, a better class of cottages, built in convenient situations both for the farmer and the employé. Without entering into minute particulars it is sufficient to say that those cottages should contain, for men with families, not less than three sleeping rooms, and that they should have attached to them a suitable garden, the cultivation of which should be required, and necessary time allowed for it. The outlay in cottages is a landowner's matter, but the tenant can well afford to pay interest on the amount, for not only would he have his labourers living on his farm much to his own and their convenience, but he would be able to offer them houses fit for decent families to live in; and as the rent would be a part of the wages, which he would have in his own hands, he would be secure from loss, and he would have his men always close at hand instead of, as is too often the case, a mile or two away. In the second place there is room for a beneficial change in the payment for labour. There is at present too much adherence to a fixed scale of wages. I would suggest a distinction between the skilled workman and the mere drudge. A good ploughman, for instance, well acquainted with, and careful in the use of his horses and gear, or a competent man to sow, drill, or take charge of the machinery, should be entitled to extra pay. A workman of several years

standing and of tried honesty and efficiency in his present place, should also be carefully rewarded; and I do not think that any person farming on a large scale should be without a foreman, who might be relied on to take charge during the master's absence, and to whom it would be worth while to pay a higher rate of wages for taking an active interest in his master's prosperity. Mr. C. S. Read, M.P., in an address recently delivered to agricultural labourers, said, "A man's arms may not be so strong and active at sixty as they were at thirty years of age; but by perfecting himself in the knowledge of all farm work (especially in the value of piece work), by noticing the wants and habits of stock, by being able to instruct young hands, and direct them at work, to my notions of what trustworthiness and general good conduct are sure to secure for him, I say a man of sixty years can in many ways be worth more to a farmer than the strongest, most active, and most willing of his younger labourers." Piece work carried out as far as practicable is most desirable for employer and employed, and is a good way of getting through work to be done in a limited time, and by a limited number of hands. I have found in hoeing roots that great despatch can be got by setting women to cut them out at proper distances, and little girls to single by hand; and the latter being better able to stoop and quicker with their fingers accomplish the work in considerably less time, and more perfectly, than the women could possibly have done in the time, with or without boots. This method is satisfactory to both parties, as the women and girls get better wages, and I have my work done with greater despatch, and am saved the trouble and expense of a man to overlook and superintend. The turning of dressing, digging of potatoes, planting cabbages, hacking ditches, and many other operations might be most advantageously done by piece work, and it will pay a master better to be cutting out and superintending such employment than to be himself taking part in this manual labour. What ideas or energy will a man be possessed of, who is tied to work from six in the morning until eight o'clock at night, with perhaps hardly an opportunity to go to the House of God on the Sabbath, and conscious that working from morning till night, whether he accomplishes much or little, and prove faithful or unfaithful to his duty, his rate of pay will be the same? Why is it that farm labourers, as a class, are more ignorant than others? I believe it is owing to drudgery that knows no recreation and no change but the workhouse or the grave! This ought not to be, and the evil lies mostly with the employer. A kindly interest in the welfare of those under him, a little arrangement for his liberty on the Day of Rest, and occasionally on other days, by giving him more contract work, and by caring for the education of his children at the Sunday and day schools—this will have a beneficial effect, and will make him a better servant and a more useful man to society. Without such steps we shall soon find the best of our men leaving for more congenial employment, while we shall have to depend on the cast-off population of neighbouring agricultural districts, and the dregs of our own people. Perhaps it may be asked why I have placed the improvement of the cottage before the improvement of the man? In the first place, if a man is installed in a decent and comfortable dwelling, and you insist on his keeping it clean and having his garden in a proper state of cultivation, it will be one great step towards improving the man himself, and he will strive hard to merit such a home, rather than return to his former hovel. Another reason is that should the labour supply fail, the landowner, and not the tenant, will eventually suffer most. Therefore, the landowner should initiate the reform by providing his estate with cottages which would be an ornament to his property, and would be the first step towards the increased welfare of the working man."

THE AGRICULTURAL PROGRESS OF SOUTH AUSTRALIA.

The Statistical Register of South Australia for 1866 affords much interesting information regarding the progress and resources of that thriving colony. Although chiefly known to us as great producers of breadstuffs, our neighbours are by no means entirely dependent on agriculture. Last year their exports of wool amounted to nearly a million sterling; their mineral products, copper, lead, and silver-lead, to £224,000; while their exports of grain and flour only reached £646,401. The year, however, having been one of remarkably short crops, can scarcely be regarded as a fair criterion of the relative magnitude of the agricultural interest. During the two previous years the exports of grain and breadstuffs averaged more than double that amount, being £1,464,593 and £1,228,480 respectively. The census statistics of 1866 not having yet been published, we have no means of ascertaining what proportion of the population are engaged in agricultural pursuits, but we find the area of land under cultivation was 739,714 acres, being 4½ acres for each inhabitant; while experience shows that one acre per head is more than sufficient to supply abundance of food for a population. Three-fourths of their agricultural class may therefore be said to be busily engaged in exhausting their own soil in order to supply foreigners with food; and the whole class to be dependent, not so much on the quantity of corn produced by their fields, as on the price which foreigners will pay for it. Of course wheat is the great staple of agricultural produce. Of the 739,714 acres cultivated, 457,628 acres were under wheat; 130,501 acres under fallow, so as to allow wheat to be grown next year, and 111,339 acres yielded hay, a great proportion of which was probably consumed by horses and bullocks engaged in the cultivation or transport of wheat.

Although the South Australian farmers have on the average much smaller crops than those of Victoria, and although the price per bushel has been necessarily lower there than here, the area put under wheat cultivation has steadily increased year by year, in spite of both low prices and short crops, which have operated as a serious check on the operations of the Victorian farmer. The utter futility of attempting to promote wheat culture by "liberal land legislation" could scarcely be more strikingly exemplified than by a comparison of the agricultural statistics of the two colonies since 1861. During the years 1861-2, 196,922 acres were cropped with wheat in Victoria; but, in spite of the Duffy Land Bill of 1862, which was to settle so many thousands on the lands, and to convert Victoria into a great wheat-exporting colony, wheat culture steadily decreased during the next three years, till it fell to 125,040 acres. Then, as if out of spite, during the two succeeding years, when Mr. Duffy's Act was practically defunct, and without any but the most trifling assistance from Mr. Grant's free selectors, the area put under wheat rose to 226,862 acres; and the produce, for the first time in the history of the colony, has yielded a surplus for export. In South Australia, on the other hand, where every acre was sold by auction, the increasing production of breadstuffs remained unchecked, either by the low prices during the years 1862-63, or by the great failure in the crop of 1866, the acreage under wheat rising from 310,000 acres in 1863, to 457,000 in 1867. Many individuals in both Victoria and New South Wales have not scrupled to accuse the Adelaide farmers of wilfully under-estimating their crops in the returns sent in to Government, in order to get artificially high prices for their wheat. This was particularly the case in 1866, when the failure in the crop was said to be greatly exaggerated, and it was afterwards put forward, as a matter of congratulation, that the South Australian farmers had over-reached themselves; that they had oversteered the market, and had been obliged to sell the great bulk of their crops at lower prices in consequence. On referring to the exports of breadstuffs for the year, however, we find strong evidence that both assertions were equally unfounded. In the first place, the exports are much smaller in proportion to the estimated crop, in 1866, than in any previous year. If the crop had been really greater than the estimate, the quantity available for export would have been greater instead of less. Then, with respect to the price the farmers have sold at, we find that the wheat exported is valued at the rate of 6s. 6d. a bushel, while the

average for the year is only 6s. 2d. If the farmers had oversteered the market, the wheat, which is doubtless valued at the price current at time of export, would have been represented by a much lower price in the exports than the average market price of the year. This seems to have occurred to some small extent in each of the four previous years. In the exports of 1864, indeed, the disparity is so great, not only between the export value of wheat and the average price of the year, but also between the relative values of wheat and flour exported simultaneously, that we are inclined to believe that a clerical error exists in the quantity of wheat exported. If, instead of 195,345 quarters we read 175,345, the price, instead of 7s. 2d. becomes 8s. per bushel, which is quite in harmony with the price at which the flour is valued, namely £20 4s. In the following table, therefore, we take the price of wheat from the flour exports, but we do not presume otherwise to depart from the figures of the Government statist. The exports of flour are reduced to wheat, at the rate of 4½ bushels to the ton.

WHEAT CULTIVATION IN SOUTH AUSTRALIA.

	1862.	1863.	1864.
Acres	310,636	320,180	335,758
Yield per acre	11 bush.	12 bush.	14 bush.
Crop (bushels) ...	3,410,756	3,841,824	4,691,919
Exports	2,299,140	2,719,763	3,444,846
Home consum.	1,111,616	1,122,062	1,247,074
Export price	4s. 8d.	4s. 8d.	8s. 0d.
Average of year...	4s. 8d.	4s. 10d.	8s. 6d.
Acres	1865.	1866.	1867.
Yield per acre.....	390,836	410,808	457,628
Crop (bushels) ...	4,252,940	3,587,800	6,561,451
Exports	2,793,063	1,746,368	
Home consum.	1,539,886	1,841,433	
Export price	8s. 2d.	6s. 6d.	
Average of year...	8s. 7d.	6s. 2d.	

Taking the export value as the average price received by the farmer, we find the gross return for cultivating an acre of wheat and bringing the crop to market to have fluctuated from year to year as follows:—1863, £3 11s. 4d.; 1863, £3 16s.; 1864, £5 12s.; 1865, £4 9s. 10d.; 1866, £2 16s. 9d.; the average for the five years being £3 13s. 2d. If they should succeed in getting rid of their whole surplus of four and a half millions of bushels this year at an average of 4s. 6d. a bushel, the farmers' returns would be £3 4s. 6d. an acre, which, although below the average, is much above the minimum, so that we may expect the cultivation to go on increasing. If we apply the same rule to Victoria, and assume the price of wheat to be sixpence a bushel above the Adelaide figure, we find that the Victorian farmers' returns would be as follows:—

	s.	d.	by	£	s.	d.	Acres.
1862...	5	4	18	4	10	0	196,993
1863...	5	4	18	4	10	0	192,008
1864...	8	6	9	3	16	6	149,392
1865...	8	8	15	6	10	0	125,040
1866...	7	0	19	6	18	0	178,628
1867...	5	0	23	5	15	0	226,863

It would appear from the above, that while South Australian farmers could afford to grow wheat for £3 11s. per acre, the Victorian farmers could not, or would not grow it at £4 16s.; while on the other hand, as soon as wheat-growing paid at the rate of £3 10s., the land placed under this crop was almost doubled in two years; and as the returns for the present year are also very good, it is probable that the area of wheat cultivation would have been greatly extended, even without the aid of liberal land schemes and free selectors. But our legislators and public writers cannot think of applying common-place economical principles to the land question. Agriculture being elevated into a virtue should probably be its own reward; and

that its votaries should be influenced by sordid considerations of a pecuniary nature, is set down to the machinations of squatters and capitalists, against whom a very heavy bill has been already run up. Even in Adelaide, not satisfied with their 4,500,000 bushels of surplus, many are so eager to grow more wheat, that they want the Government to offer the land at reduced prices for that purpose. We must say we think the demand peculiarly ill-timed. When the other colonies are burdened with a forced competition in agricultural pursuits,

there is little chance of a market near at hand; and when such favourable accounts are received of the harvest in England and America, there is little chance of a remunerative market in Europe. We think that the section of the Press which has lent itself to this agitation would better consult the true interests of the community by seeking out some new channels for the superfluous capital and labour, than in trying to bolster up and extend by fictitious means an already overgrown and most precarious industry.—*Melbourne Economist*.

LIME: ITS USES IN AGRICULTURE AND MODES OF APPLICATION.

Lime, viewed as a manurial element, is one of the most valuable and important mineral substances with which the agriculturists of the present day are acquainted. By its use, even in very limited quantities, waste land in process of reclamation is quickly brought into a state which renders it capable of bearing profitable crops; the coarse vegetation which generally covers such land, and uselessly occupies the soil, being speedily decomposed, and the elements of fertility thereby imparted. It is not, however, to waste land alone that the application of lime is valuable, as it can with great propriety be used upon land in a high state of cultivation with highly beneficial results; in fact, the bulk of the lime used in agriculture is applied to land long in cultivation and worked in the usual rotation common to each district. On heavy clays, adhesive and difficult to work, lime pays for its occasional application by the mere mechanical influence exercised on such soils. By the action of quicklime the most stubborn soils become disintegrated, and consequently easy to work; the saving of labour alone in many cases paying for the first cost of the lime.

In liming land the practice of farmers has greatly altered of late years; as, instead of a heavy dressing at long intervals, which formerly was prevalent, smaller quantities at intervals of from six to ten years, according to the rotation followed, is the most popular method of applying lime at the present day. This stands to reason, as, apart from its mechanical action (the great use of lime being to liberate and utilize the inert organic matters contained in the soil, and so enable it to enter into new combinations), too heavy a dressing exhausts this ingredient too suddenly, and, instead of benefiting the land, such an application materially injures it for several successive seasons. Light land will, of course, sustain much greater injury from an excessive dose of lime than heavy clays or coarse lands, and be much longer in recovering from the effects of an over-dose. Land in good manurial condition, which has not received an application of lime for many years, is greatly benefited thereby; and its effects are so rapid and striking that many farmers have been induced to continue its application until the fertility of their soil was almost—nay, in fact, completely—exhausted. A farmer who uses lime in considerable quantities without recruiting the exhausted energies of his land with a proportionate supply of manure, may make a decent living possibly for some years; but if he himself should escape the consequences of such scourging husbandry, those who succeed him can scarcely hope to do so, as there is much forcible truth in the old couplet—

"He who limes without manure,
Will leave his farm and family poor."

One special commendatory feature to the use of lime in agriculture is its portability—this being more particularly the case when the situation permits of its being drawn from the kiln in a state of quicklime, or, more familiarly, lime-shells. It can be carried with comparative ease to great elevations, where the conveyance of farm-yard

manure in any appreciable quantity would be simply impracticable; and, under its sweetening influence, heath, moss, and bent-grass soon disappear, and become an active and abundant source of nourishment to the cultivated grasses or other crops, if the situation permits of their cultivation. On reclaimed moorland powdery lime acts much more quickly in reducing the coarse vegetable matters to a state by which the after-crops can be benefited, than when used after it has become mild. In Scotland we have seen land broken up, and, by the application of lime alone, grow the cultivated grasses in extraordinary luxuriance, where previously nothing was to be seen but an unbroken waste of heather, wonderfully beautiful certainly in autumn when in full flower, but practically valueless, and the abode of the mountain hare, roe-deer, fox, and other animals. This particular piece of mountain was broken up in 1850, and torn to pieces by repeated ploughings as minutely as the state of the soil would admit, then left rough for the ameliorating influence of the frosts of winter. The following spring, operations were resumed as soon as the weather would permit; and, after another ploughing and the removal of stones and other encumbrances to successful tillage, lime was liberally applied and worked in, and the land left for a short time to rest, previous to its being sown with grass seeds. This, owing to the extent of the numerous operations that had to be carried out, could not be accomplished until June; yet, notwithstanding the comparative lateness of the season, by the end of August or beginning of September the young grasses were so thick and luxuriant that a large flock of half-bred Leicester sheep, five to the acre, were placed upon it, and were sustained thereon until finished for the butcher. This is probably an exceptional case, the soil, although on the top of a hill, or almost mountain, being deep, and naturally fertile, requiring only the outlay of a few pounds per acre in labour and lime to make it productive: but, notwithstanding, much land that is still unreclaimed, or only partially so, is capable of extraordinary improvement by a judicious yet moderate expenditure of capital in lime and labour. It is evident that without lime much of the reclaimed land on elevated situations must have still remained in a state of nature, from the great difficulty of getting bulky materials placed upon the land, not to take into consideration the inability of any kind of organic manure to take the place of lime in quickly decomposing and rendering active the useless vegetable matters which originally had possession of the surface. To be sure, in the absence of lime, paring and burning is a very effectual method of getting rid of the roots of heath, rushes, and other obstructions present on land in a state of nature; and when worked up, portable manures can be very successfully used as fertilisers; by their use turnips can be raised, if the situation admits of their cultivation, and being eaten off with sheep the land is thus well prepared for the reception of the grass-seeds. Elevated land, however, is seldom possessed of such depth of soil as to be able to spare any of it for the process of paring and burning, which is at best an exhaustive

operation, and should never be attempted unless there is sufficient depth of soil to warrant its being done without permanently, or at least for many years, injuring the soil by destroying its resources.

The carriage of lime by railway has of late years conferred a great benefit on the enterprising agriculturist, as by this means lime for manurial purposes has been carried into districts where previously the expense of carriage amounted to actual prohibition. By rail it can be conveyed away immediately on being drawn from the kiln, and the land can thus have the application of quick-lime. When a farmer can only avail himself of water-carriage to bring lime within easy carting distance of his farm, he must be content with it in its slacked or mild state, which puts him to a double disadvantage, as the application is not so beneficial, and the carting from the increased bulk is doubly laborious. The directors of most railways very properly give every facility for the conveyance of such bulky articles as lime and dung, and take them at very cheap rates. We are aware of lime-shells being carried twenty-four miles at about tenpence a ton, which charge is a very marvel of cheapness and offers great encouragement to the farmers in the districts traversed to use it, which they do, and with excellent results, as must always be the case (save with certain exceptions) when applied to land, which from its distance from limestone has never had an opportunity of being overdone or even of having had a moderate dressing.

In applying lime there is often considerable difficulty in managing successfully, should the weather break and continue obstinately broken for a lengthened period, as after becoming soaked the land cannot be carted on without injury, and the lime itself is extremely apt to run into mortar and so be rendered useless. That the land may have the full benefit of the application, plenty of assistance ought to be kept at it until completed, the lime being worked in as soon as spread, as it soon loses its causticity when exposed to the atmospheric influence. On farms the soil of which is so heavy as to preclude altogether, or in a great measure, the growth of turnips and other green crops, and so necessitate a continuance in the old system of periodical fallows, that period of the rotation at which the bare fallow occurs is obviously the best for the application of lime; and during the summer or autumn, previous to the wheat sowing-time, the lime may be applied. If applied fresh from the kiln, sufficient time must be allowed to permit of its being cooled before the land is sowed, otherwise a portion of the seed may be lost by coming in contact with the hot lime. On light land, worked on the four, five, or six course rotation, the months of September and October, or just immediately after the removal of the corn to the stack-yard, is a very convenient season to lay on lime. On those soils on which the turnip crop is improved by a dressing of lime, it should be put on immediately after the fields are cleared of the preceding corn crop. No period of the year affords a better opportunity for liming than this; as there is, first, a long day admitting of a full day's work being done—a matter of the utmost importance when a large staff of men and horses is employed; and, second, the lime can be admirably mixed with the soil by the usual course of autumn culture, which the fields would have got independently of the lime being put on at that time. The grubber is probably the most perfect implement at the command of the farmer for thoroughly incorporating lime with the soil; and it is also at the same time the safest, as by the action of the grubber the powdery particles of the lime are mixed with the surface soil, not buried under it, as is too apt to be the case when turned in by the plough. In this way the well-known tendency of lime to sink is in a great measure counteracted; the soil, and through it the farmer himself, getting the full benefit

of the application. In grubbing-in lime the ordinary grubbing-shares are better than the broad or duck-footed, as the earth can be worked to a greater depth with less labour to the horses; and, indeed, the operation of cleaning the stubbles is quite as well performed by the ordinary shares, unless in exceptional cases, when passed over the field laterally and longitudinally. When well grubbed-in, the autumn ploughing may then with all safety be performed, as deep too as the capabilities of the soil will permit, without the slightest danger of burying the lime too deep and losing thereby most of its good effects. Most soils resting on the old red sandstone can be safely treated with lime when in preparation for turnips or any other green crops, providing it has been laid on and incorporated with the soil sufficiently long to render the caustic principle of the lime innocuous. On heavy soils or those of a boggy nature there is comparatively little danger, as the heat is much sooner absorbed; and every year lime may be seen put on such soils in April and May, worked in immediately with plough, harrow, or grubber, and the seed thereafter sown, without sustaining the slightest injury. When the land has lain in grass for a considerable time previous to having been broken up for the preceding corn crop, and consequently contains a large amount of organic remains—otherwise decaying vegetable matter—the application of lime to the green crop is productive of the happiest results. In the half-decayed turf it has something to act upon, which it quickly does, rendering it soluble and subservient to the nourishment and rapid and healthy growth of the young plants. In such a case as this lime takes the place of the portable manures, and, when the ordinary quantity of dung is used in conjunction with it, a capital crop of turnips is the result. In any case it will seldom be found advantageous to use caustic lime, and guano or any of the dissolved bone manures for the same crop, as the lime, particularly if recent, will be sure to have the effect of neutralizing the action of the other fertilizers, rendering their application useless and the money spent in purchasing them a total loss. When a farmer has a field such as has now been supposed, he is often tempted, should his agreement allow him or his landlord give permission, to repeat the corn crop, which, although it may make a good many pounds per acre for that particular season, is mostly in the end injurious to the land and a loss to the farmer. A much better plan, and one quite consistent with the most stringent rules of good husbandry, is to lime on the severance of the first corn crop, work well in, and the following season drill and put in turnips, which will, all other contingencies being favourable, be a first-rate crop; the rich mould formed by the action of the lime on the fibrous mass of half-decayed turf being amply sufficient to grow a full crop. On limestone land, however, and limestone gravels, attempting to grow turnips in this way is highly dangerous, and almost certain to result in total failure; and we would on no account have it supposed that we recommend the use of lime on such soils for the growth of green crops, either in the mode here described or in any other way whatever. Experience and observation both teach that on those soils there is already as much calcareous matter as can be assimilated by the turnip plant, and consequently any further addition to the supply already possessed by the soil can only act as poisons do in the animal system—either by destroying vitality altogether, or injuring it so seriously as to render the plant incapable of maturing a healthy and consequently profitable crop.

In liming land previous to laying it down to grass, if it has not been done for the green crop, the proper time for doing so, and, in fact, the only time in which it can be done, is obviously the winter and spring, according as the green crop is removed, and also according as the weather affords favourable opportunity. If there is much to be

done, the weather must be carefully studied, and no opportunity lost, as poaching the land at this late period of the season is especially injurious, more particularly as it has no chance of recovering itself from the effects of such injury between that and seed-time. Frosty weather, of some continuance, affords a capital opportunity for winter liming; the hard roads materially lessening the labour on the horses, and the carts passing over the land without in the slightest degree injuring it.

When worked in the ordinary six-course rotation, suitable for medium land, liming at this part of the course is very appropriate, and a light dressing can with great propriety and excellent results be given at its periodical recurrence. We will suppose that the soil has been treated as it ought to be, while in preparation for the green-crop, and is therefore now full of manure and decaying vegetable matter. The lime having thus something to act upon, the land gets the full benefit of the application, every portion of the manure deposited in the land being brought into active operation through the agency of the lime, and none of it being permitted to remain dormant or useless. When the field that has been limed is at length laid down to grass, and is being grazed, the good effects of the lime can be very distinctly seen: the grass is of a rich green colour, and so sweet that it is highly relished by stock of every description. A very simple proof of what the lime does can be had by leaving a small portion of a field undone; a circumstance, however, which often happens without being intended, through the weather breaking, and continuing broken for such a length of time, as to preclude the possibility of its being finished in time for the getting in of the crop. When it so happens that a portion of a field is thus left, it will almost invariably be found that the limed and unlimed portions show as distinct as if a line was run through the field. Whilst the limed part remains green throughout the year, and is nipped closely by both cattle and sheep, the unlimed part will, unless in otherwise excellent condition or naturally prime land (which is the exception and not the rule), be white during a considerable part of the year, never attaining the intense green of the other, and never so thoroughly relished by the stock. About the end of the year, the one will be as even and smoothly eaten as if the scythe or mowing machine had passed over it; and the other, the unlimed portion, most probably full of rough tufty patches, which will not be freely eaten by the stock until sweetened by the frosts of winter. Nor does the comparison end here; for, when again broken up, the limed part will be clean and friable, the furrow slice falling over into its proper position under the action of the plough, without an effort almost on the part of the ploughman, and presenting an admirable bed for the reception of the seed. The unlimed part will be much stronger, not lying over nearly so well, and, consequently, giving the ploughman considerably more trouble. When the corn is cut, and the stubbles come to be cleaned, this side will be found to contain a much larger percentage of the roots of couch-grass and similar weeds than the other. Lime is in every case an excellent cleanser of the soil, destroying the vitality of weeds, and every kind of coarse herbage; this trait in its character being very clearly demonstrated by such an experiment as we have now described.

From our own experience, we believe that there is no mode of applying lime to the land, so perceptible for good and so lasting in its effects, as just previous to its being laid down. What between harrowing, grubbing, and ploughing, it gets so thoroughly incorporated with the surface of the soil, that its tendency to sink is in a great measure counteracted, and we have found that the nearer to seed-time it can be applied, the greater benefit does the crop derive from it, and the dressing need not be so large as when given previously. Some judgment

must, however, be exercised when laying on caustic lime at such an advanced period of the spring, as, if not well mixed, a considerable portion of the seed may get scorched, and the braird will be consequently patchy and unequal. On very thin soils, such a contingency is almost unavoidable, and it is better to lay on the time sufficiently early so as to obviate all danger from its causticity.

We have thus described the leading modes of applying lime to land while in its caustic state, and the advantages to be derived from its application; but there is another mode of utilizing lime, which yet remains to be noticed, of exceeding value to the agriculturist, and one which, if skilful and intelligent, he is not slow to avail himself of to the utmost of his power—viz., mixing lime with rich earth, decayed vegetable substances, and every kind of refuse containing organic remains, and thus forming what are known as composts.

When earth and lime are thus mixed there would appear to be a chemical, as well as a mechanical, change effected on both materials, as the mixture acts as a manure more or less powerful, according to the richness of the earth used for the compost.

In making up composts it is worth while taking notice of two things—first, that it is of very little use taking the trouble of mixing lime with exhausted earth from the surface of a field; and second, it is of the utmost importance to mix as much quick-lime with the earth as will be able to heat the whole mass. If this is not the case, a portion of the good effects of the mixture will be lost, as the necessary change cannot be effected in the character of the whole. Moreover, independent of this, if the compost is made too poor in lime, the quantity the land receives per acre is so infinitesimal that it is impossible the soil can receive any benefit from its application, the only good got by it being then what manurial property might be contained in the earth of which the compost was composed. Old banks of good earth, scourings of ponds and ditches, road scrapings, and portions of headlands occasionally dug out, form admirable sources of material for excellent composts. When the mind of the farmer is opened to the necessity and prudence of having a few heaps of rich compost at his command, it is astonishing how much matter he will scrape together in the course of each year eminently suitable for this purpose, which might easily have lain neglected for years, and probably never have been made of any practical utility.

Chemists tell us that lime enters more or less into the composition of the cultivated plants; and it appears as if there was no way it could be applied, so as to enable them to get the full benefit to be derived from it, as by placing it within their reach in the shape of compost.

No one would advocate the using of composts alone for, say the growth of any kind of green crop to the exclusion of manure, unless in very exceptional circumstances, such as has been already noticed in using lime by itself on land full of decaying or inert vegetable matter; but in conjunction with farmyard manure they can be used with excellent effect, and heavy crops grown with a comparatively light dressing of dung, when the compost used is of good quality. The ordinary mode of laying on compost, in preparation for green crops, is the best that could be devised for both utility and economy. It is usually laid on and well worked-in during the spring, when the land is being prepared for the season's crop, the various operations of ploughing, harrowing, and grubbing keeping it near the surface, and mixing it so intimately with the soil as to render it capable of being assimilated by the plants as food whenever the roots are sufficiently evolved to permit of their doing so. Used in this way, compost forms an admirable aid to farmyard manure in growing potatoes, and assists greatly in bringing the soil into the

frable open state so conducive to the successful cultivation of this crop. Lime applied to the potato crop has been considered by some to be a kind of antidote or preventive of the disease; but that it has such effect is extremely doubtful, as we have repeatedly seen potato fields that were treated with lime, both caustic and in compost, very much affected by the disease.

Of late years the potato disease has been very erratic, entire districts having been passed over without much injury; while others, with as much apparent reason for exemption, have suffered so much as scarcely to be worth the trouble of digging. This we attribute more to atmospheric causes than to anything connected with the treatment or culture of the land. Every cultivator must therefore take chance for the results, it being scarcely possible for anyone to ward-off disease; and we therefore look upon lime or lime-composts as being a good thing to use in preparation for potatoes, without attributing to them any curative or preventive property whatsoever.

For turnips and mangolds lime-composts are also highly beneficial, good crops being grown with a comparatively light dressing of dung, when the compost is of good quality and applied with an unsparing hand.

As an inexpensive and, at the same time, telling improvement on grass lands, composts of lime and earth stand conspicuous; and the good effect of their application is easily recognized, being both immediate and permanent. As an easier mode of applying lime, many farmers lay out the shells in small heaps on the grass, just as they come from the kiln, spreading evenly over the surface when dissolved by the action of the weather. Lime thus placed upon pastures certainly has a revivifying effect upon the grasses of which they are composed, killing moss and other useless plants which frequently threaten to take possession of the land, to the exclusion of the more valuable herbage, and the application has the merit of being a cheap one. The effect of this dressing, however, is not nearly so lasting as when the same amount of lime is applied in compost; nor is the improvement so apparent. During the past season we have seen hay to the weight of at least two tons per acre cut from a field, which we never before saw mowed, for the simple reason that it would not have paid for the trouble had hay been attempted to be taken off it; and the after-grass came thick, strong, and as green as a leek immediately on the hay being cleared off. This improvement was effected solely through the agency of a liberal dressing of lime-compost, which was laid on during the spring, just previous to the commencement of the growing season. The compost consisted of the sediment that was taken out of a large pond for several seasons, mixed with as much quicklime as imparted a heat to the entire mass. This sediment was a manure of itself, and, even without mixing with lime, would have shown excellent results as a top-dressing; but, combined with the lime, it probably formed one of the best dressings that could be placed on pasture land.

Having thus noticed the leading uses of lime in agriculture, the crops which it especially benefits, and the periods of the year and of the rotation most suitable for its being put on, we now proceed briefly to notice the speediest and most economical mode of placing it on the land, and preparing it for being worked in, so that the soil shall receive all the benefit it can possibly derive from its application. Many men draw their supply of lime, and place it on the headlands until it is slaked, objecting to put it on the land in the state in which it is drawn from the kiln, lest while in the act of slaking such an amount of heat should be evolved as to injure the land by burning. Again, others draw it, and place it in the same way, for the purpose of having it at hand slaked and ready to lay on in spring, just previous to seed-time, so that it

shall become intimately mixed with the soil by the very operations which prepare it for the reception of the seed. The intention of applying the lime at this particular season is, by having it close to the surface, to obviate the tendency of the lime to sink, and so have it brought as much as possible within reach of the roots of the plants—an idea excellent in theory, but exceedingly difficult to carry out satisfactorily in practice by this method, as we shall presently show. By laying lime on the headlands there is a second lifting necessarily involved, which of course costs something, and probably takes up the time of the horses at a period of the year when their services are urgently required elsewhere. This, however, is not the most serious objection to laying lime in large heaps to slake gradually; there is another, and one more intimately connected with the character and properties of the lime itself—viz., the liability to injury from excessive rain, which often runs it into such a state of mortar that a fresh supply must be drawn and mixed with it before the slightest attempt can be made to spread it on the land. One can scarcely conceive of anything more intensely annoying than to be placed in such a position at a busy time, besides losing all the effect of an application of caustic lime, and hardly even having what could be called a dressing of mild lime instead. Now we wish to show that the lime-shells can be placed on the land as drawn from the kiln without the slightest danger of burning the soil during the process of slaking, and also by drawing it on at once in this way; the benefit the land receives from the application of lime will be practically greater than is the case generally when the shells are laid in heaps by the headland to await the time when it can be carted on and mixed with the soil during the spring operations. We say this, however, with all deference to the opinions and practice of those farmers who adhere to the mode of slaking on the headlands; and many successful ones we know who follow it, and who utterly condemn, and that in no measured terms sometimes, those who do otherwise as pence-saving and pounds-spending agriculturists. We think, however, that those who lay out at once in small heaps have the best of it, and proceed therefore to detail the practice and best mode of doing so with economy and despatch. To ensure regularity and evenness in spreading, and to make absolutely certain that no portion of the field shall get more than another, it is well worth while sending a man with a horse and small seeding-plough to mark the field into squares, previous to the lime being brought; he will mark from 10 to 15 acres a day, according to the distance considered most suitable; and the satisfaction of having it regularly laid on, and that without the slightest trouble, will more than doubly compensate for the time occupied in marking it off. After repeated trials, we find 25 feet to be a very convenient distance for laying down, as the men in spreading have no difficulty in throwing it out 12½ feet, and scarcely require to shift their position to do so. The number of heaps required for a statute acre at this distance is 70, and the quantity to be given per acre, whether more or less, can be easily apportioned by making a greater or less number of heaps of each load, as the shells are being placed on the land. Supposing the quantity intended to be given per statute acre to be four-and-a-half tons—which is a very fair dressing on light friable soils—the number of loads required will be six, of 15 cwt. each. Each load thrown out on the land in twelve little heaps gives seventy-two, which brings the weight of shells per acre just as near the required quantity as there is any occasion for, a cwt. more or less making no difference, and exercising no perceptible effect on such a large area as 4,840 square yards. If a larger dressing is intended, the number of falls to each load can, of course, be lessened; and if smaller, correspondingly increased; the quantity laid on

being thus simply managed, without any interference with the original marking. When placed upon the land, the shells should at once be trimmed nicely together, and the heaps balanced or equalized by taking a few stones from those heaps that appear to be rather large, and placing them on those that are small, so as to ensure uniformity in spreading, as in the hurry of drawing them from the carts it is nearly impossible to have the falls equal. This being done satisfactorily, the lime can at once be mixed with a few shovelfuls of damp earth, and a sprinkling thrown over the top of the heaps, sufficient to cover the lime, and no more. To ensure immediate slaking, care must be taken, not only to *cover*, but *mix* the lime with the earth; otherwise about a week will elapse before anything can be done in the way of spreading. When well mixed, in an hour, or even less if the soil is very damp, a strong heat will be evolved, and every heap will commence steaming like miniature kilns. In a few hours the steam ceases, and on inspection the shells will be found to have burst, and in a great measure crumbled down into fine powder. The heaps, which will by this time be three times their original size, may now be stirred up with the shovel, the covering of earth and the lime being well mixed together, so as to completely dissolve the pieces which had not previously been thoroughly reduced. In four or five hours the lime will be fit to spread, and thus it can with

all ease be slaked, spread, and worked in, within twenty-four hours of its being drawn from the kiln. By attending to it, with sufficient hands to do it thus quickly, the lime is not permitted to lie long enough to burn the soil, there is almost no danger from injury by the weather, as there is only one day's drawing a-head of the plough or grubber which is working it in, and the soil gets the full advantage of a dressing of lime in a really caustic state—a difficult matter to be obtained and exceedingly problematical under any other mode of management. Considering the value of lime when applied to land freshly broken up, or in good manurial condition, it is by no means expensive, unless the district is very inconveniently situated for carriage by water or rail, or even by the ordinary cart. Taking the average price of a ton of lime and cost of carriage to be 10s., a dressing of five tons to the statute acre can be given for about £3, leaving an ample margin for mixing and spreading. If applied so frequently as every six years, four tons would be quite enough on light land, whilst heavy clay soils would take six, and suffer no injury; but, on the contrary, be very much benefited by the application. He who does his utmost to treat his land well, by cleaning properly, manuring liberally, and liming judiciously, not only deserves success, but mostly attains to it, good treatment of the land being the surest road to material prosperity. J. S.

THE WASTE LAND OF IRELAND.

At the monthly meeting of the Athy Farmers' Club, Mr. WILLIAM DAVIDSON read the following paper:

A large tract of this country is in a waste state, being rendered so by a variety of causes; but, to shorten this paper, I will divide them into three different classes—first, the wet clay lands; second, the bog and moory lands; and third, the hill lands. The first class, or wet lands, comprise a large extent of what lies waste; but much that comes under it is not altogether useless, for it is let at low rents for grazing purposes, and during a favourable season may pay well. It is a sad state of matters that half of the country is allowed to be in a half-waste state, when money is offered to reclaim it, and make it pay well for the outlay. These lands are generally water-logged during the winter and spring months, and produce a coarse herbage, only eaten by stock when they can get nothing else. If there happens to be a dry piece of ground in the midst of a large tract of this description, the stock will have it picked to the earth, showing how much they prefer it to the other rough grasses. The first step towards the improvement of such lands is thorough drainage. For this purpose Government offers money on very reasonable terms to proprietors, or to a tenant who holds under a long lease—I believe forty years—and charges the money on the property improved, letting it run over a certain number of years, at the rate of six-and-a-half per cent. for twenty-one years, which pays up capital and interest; and I believe the Government will even give money for five per cent. over thirty-five years. When such a great advantage is offered, it should be more generally accepted, and the country turned into a fertile plain, instead of a bleak, cold waste. Drainage, I believe, was first invented by the Romans; but I think it was never properly understood till Smith of Deanston explained its benefits. It is needless for me to enter into the advantages of drainage to the soil, such as the admitting of air and increasing its depth, &c., as they are now pretty well understood, and are ably described by scientific writers. In this paper I will only notice the practical part of the work. There is still a diversity of opinion as to the best mode of thorough drainage, some adhering to the old, close, shallow drainage, while others prefer the deep drains. I believe either system may be useful, according to the quality of the soil; but in ninety per cent. of soils the system of deep drainage will be found the most perfect. If a porous, sandy soil is tapped within two-and-a-half feet from the surface, a three-feet drain will draw well; but

on most of the soils I have had to drain I have found a four-feet drain the best, as it gives a greater depth of dry soil, and land subsides so much when drained that a three-feet drain becomes only a two-and-a-half-feet one the second year, which I think is too shallow. The first consideration in laying out a field for drainage is to find out the best fall and outlet, then, by a close examination of the subsoil, discover its capability for drawing the water, and then regulate the distance between the drains accordingly. When the drains are four feet deep, on most soils thirty feet will be found a suitable distance to leave between each drain. Economy of labour and money should always be kept in mind. There is a great difference in the way some fields are laid out with a view to saving expense; and, although thorough drainage might have been performed, the same could have been done at less cost by a skilful and practical manager. Very often £1 per acre could be saved by a little thought when planning the drains. Even some engineers abide too closely by a formerly-laid-out plan; for many things will be observed after the work is commenced, that was not before visible. The parallel drains should run with the hill, unless the fall is very rapid; and these should not be run too long without intersecting them by subs. There is no saving whatever by neglecting this, as a long drain is never safe; and when the outlet cannot have a good run from it at the full depth, the outlet may be begun at three feet, and the fall gained as the drain goes back; for it is unsafe to have a slow run from the mouth of the drain. If the soil is of a slipping nature—as most wet soils are—the drain should be all sunk three feet deep first, and all materials laid ready to fill it in as fast as it is sunk to the required depth. When there is a good fall in the field, the upper half of all the drains should be filled in before the lower half and sub-main are sunk the last foot. By commencing at the middle of the drain, the water will, in a few yards, rise over the three feet, and the upper half can be filled in before the sub-main and lower half of the parallel drains are sunk; and thus they can also be quickly done. Many fields cost double what they should, by slipping and extra cleaning out again. I have often seen drains opened, and left in that way for some time, which made them harder to be opened the second time than at first. The work is never well done when much slipping is allowed, as the sides of the drains are all slushed in. As a general rule, the tiles or stones should be always laid from the top downwards; but in some cases I have had

to fill the drain as it was gradually opened. If carefully done in this way, it makes a better job than allowing the drain to slip, and then having it cleaned out again; and when this is done, the man putting in the material should make up his drain a few perches at once, and insert a stop-water made of wood, with small holes pierced in it, to let off the clean water, and keep back any mud. But this system should only be tried when indispensable. Drainage should always be done by tail-work; and the men should be shown how to perform it in a workmanlike manner, and make a level bottom. Some are particular about binding the men to open the drain a certain width at the top. This, however, is unnecessary; for the best way is to leave it to themselves, and they will soon find it to be for their own advantage to open wide, so as to leave them working room, which is also an advantage to the owner as it tranches more land. They should also be made to open them as narrow as possible at the bottom, to suit the size of the laid down; but when boulders are found in the last foot, it is impossible to make very neat work, from the sledging; and often good men are spoiled by inexperienced masters expecting impossibilities. There is also a diversity of opinion as to the best material to fill a drain with. I believe, when stones can be had, and the ground is firm enough to cart them on, they should be used; but much of the land is so soft that the carting of stones over it is a difficult and expensive process, while tiles, well laid, are as safe and durable, where there is sound bottom. My favourite drain is a small, round, inch-tile in the bottom, and six inches of stones above it; but a well-made one-and-a-half-inch tile, properly collared, is a very permanent job; and when the drain has a sound bottom, the tile will do without a collar. Tiles should be laid by a tile-layer from the bank, as the work is seldom well done when the man stands in the bottom of the drain, because his feet make too much mud. The drain must be carefully scooped before the tiles are laid down; and one man can scoop the drain and put the sod on the tile as fast as another could lay them. The man who lays the tiles should be well paid, to make him take an interest in the work. When stones are used, they should be broken to a certain size. I think they are often broken needlessly small. A few small ones are required for the bottom; but larger ones may be put on the top. There should never be less than ten inches of stones put in; but I prefer a foot. A gauge should be used for putting them in, which is made of boards the shape of the drain, and about six feet long, and two moveable cross-sticks to rest on the bank, which can be regulated so as to let the bottom of the box go within ten inches of the bottom of the drain. The stones are then thrown into this till they reach the lower edges; and then you have the proper depth of stones, the sides of the gauge keeping them clean. The sub-main as should have a three or four-inch tile, according to the quantity of water and the fall, as a good fall makes an inch-pipe run as much as a two-inch with little fall. Some stones should also be put over the tiles in the sub-mains; and at the joinings with the small drains plenty of them should be used, so as to guard against stoppage. The cost of drainage per acre varies much, according to the quality of the soil. The cost of the materials and the supply of labour, at Blandsfort (the fourth part was moor-land, full of limestone boulders, which gave a great deal of sledging, in some parts making it more expensive), was—the men generally got 8d. per Irish perch for opening, and 1d. for filling. Men should always be allowed good wages for draining, as it is severe work, and should work in gangs of three each, one being appointed as their leader. An overseer should not have too many men under him; for I found that about twenty gangs of three each were as many as I could manage. When I had more, some of them were not properly attended to. At one time there was a great deal of bad work done under Government inspection, which has been the means of making many gentlemen think that drainage is so much lost money; but such is not the case in either the Queen's County or County Kildare, because there we have a very skilful and practical inspector, who will both see the work well performed, and is also able to give directions how to have it done so—in fact, one who thoroughly understands the improvement of waste-lands. The drainage and levelling the ditches of the Blandsfort land cost about 26 per Irish acre, on the average; liming, 23 per acre. The first ploughing was severe, and had to be done with four horses in the plough, on account of the roots of the rushes, and cost about

30s. per acre; the harrowing and sorting with spades, 10s. per acre more. Grass-seeds and rape were then sown. These were home-grown, and did not cost much—about £1 per acre—as they were sown very thick, making in all about £12 per acre for the thorough reclamation. As this grass was a fair average crop, and very good for sheep, which before would die rather than eat it in that state, I allowed it to lie two years, when the old sod—of rushes, flaggers, and other aquatic plants—was converted into vegetable mould, forming a very rich soil, and ready for any crop. On most of the fields, the first crop of oats would pay the entire expense of drainage, lime, and reclamation, had it been sold as it grew. Besides, the next crops of turnips and cabbage were always splendid; and the land is four times the value it was before. Many people think such an outlay is ruinous rather than anything else to land, as they suppose that the interest of the money is more than it is worth; and some would-be improvers still hold by the practice of paring and burning such land, which is really destructive, as all vegetable matter is destroyed. By my system the expense of burning is saved, and the rushes converted into a manure-heap; and the land pays its way as the process goes along. The first seeding of grass would become excellent pasture-land, if left so; but I prefer putting it through a rotation of cropping before being laid down. Such land, however, is generally too soft for growing turnips constantly on; and my system with it is to renew the grass every five years, by taking a crop of vetches; to feed these off by sheep; then to take a crop of rape and grass-seeds, the rape also fed off by sheep. Both these crops are fed off during summer; and there is plenty of dry tillage-land in the country, without using the heavy lands for turnip-growing; and, no matter how well drained these lands are, they will be soft during wet weather, and require skilful management. I will now treat upon the improvement of the second class of waste-land, as the bog. There are a great many bogs that are not capable of improvement—at least, they would not pay for the enormous capital required to do so; but there are many thousands of acres of moory bog-land throughout the country that would make valuable land; and the improvement of such lands is by no means such an expensive undertaking as would seem to those unaccustomed to it. Many of these swamps are covered over with deep holes, out of which fuel was cut. A large cut or river is necessary to carry off the large flow of water, and a few cuts should be run through the bog to take off the bulk of the surface water. In this way it should stand a season, to consolidate a little, when it should be thoroughly drained. The best system of drainage for such land is what is called sod drains—the drain is sunk at two feet wide, down to three feet; a spit of one foot is then taken out of the centre, leaving a shoulder of six inches on each side; a sod is then placed across this, some turf mould thrown in, and all trampled firm. If a sod is not convenient, dried turf will do for the covering, or if heather grows on the bog a scraw of it makes an excellent sod for the purpose; but whatever material goes on, it should be well trampled down. Drains made in this way last a long time, and are cheap, as the sinking is easy. The drains are generally opened and finished in again for 6d. the Irish perch. The bog holes should be filled up with heather, furze, clipping of hedges, or any kind of brushwood. The drainage of such lands is not the most expensive part of their improvement; if there is gravel, marl, or clay near the surface, it should be trenched up through the bog; if not, clay must be carted on to it, to give it a solidity to withstand droughts. Bullocks are better than horses for walking in bog land; cross roads through it can be made of heather or furze. When such lands have been clayed they become very valuable, giving large crops of mangels, cabbages, and Italian rye-grass; but corn should not be grown, as it generally lodges and rots. Turnips are also uncertain. Rape is an excellent crop to grow on bog land. The third class of waste, or the hill lands, should be improved by cutting open drains across the hill sides about 18 inches deep, and the surface water carried quickly away, and where the plough could go it should be broken up, limed, and a crop of rape taken, eaten off by sheep, and sown down again with good grasses. When travelling on the railway from Edinburgh to Kelso I was astonished to see what steep hill sides the Scotch farmers have improved in this way. When horses cannot go on it, the surface heather and rough grass should

be burned, and lime put on, when the sweeter herbage and young heather would spring up and be valuable feeding, and many sheep and cattle could be bred and fed where it is now waste. There is also a great deal of the country waste from useless fences and banks. These are easily removed, and the ground they occupy would soon pay for the expense of removing them. Ground hedges do not thrive so well here as they do in England, and when ground quicks are put down they should always have a gripe opened and the clay backed up to them for a few years, and when they get strong this could be levelled in again; but no young hedge will do well unless kept clean and trimmed regularly. When stones are plentiful, good stone walls are the best fence, and the cheapest in the end. The improvement of the waste lands in the country is almost at a stand-still from want of energy and perseverance of both landlords and tenants; the first should, in most cases, do the work, charging the farm with the interest for doing so, and the tenant should be willing to get it done, and not let any selfishness interfere with his own interests and those of the landlord. The strong feeling amongst tenants against doing anything that will eventually advantage the landlord is much against the improvement of waste lands. When a tenant has been well paid for what he does he should not grudge the landlord a share of the improvement—say at the end of a good, long lease. And although the government offer of money is a liberal one, yet they might have done more to create a stimulus for improvement amongst the farmers of the country; and for this purpose improvement farms under the management of the Board of Works should be started throughout the country. There might be two of these farms in each county—one on a large scale, say 500 acres, and one on a smaller scale, say 100 acres; these farms to be placed on the waste lands of the county, and a substantial farm-house and offices built on each, suitable to the accommodation of a tenant holding such a farm, and a practical manager set to work, with orders to put it in thorough order within six years, and young men should be taken to learn farming in each of these establishments. These young men should be made work for their board, and be taught to do all the operations on the farm with their own hands—the only way to teach them their business thoroughly; and they should be made work as workmen should do, and not allowed to learn bad habits by spending a pound in doing what five shillings ought to do. The stock put upon such a farm at the first should be the common stock of the country, suited to the land in its natural state, and then improve them by careful crossing, as the feeding improved; then at the end of six years let the farm to a tenant, and the extra rent received for it would clear off the capital expended in a few years, and the sale of the stock, improved as they should be, every six years, would clear off much of the outlay; and by the system young men would be taught how to improve land and stock in a profitable manner, and the system would be brought home to all farmers, by moving the farms every six years, and from their self-supporting system would stimulate tenants to improvement. For, after all, talk is only talk, but facts are facts; and they should not only be self-supporting, but paying, as all institutions of the kind should be. For the idea of teaching young men how to ruin themselves, or those who may employ them, is actually absurd, and far behind the present time, and would not be permitted with any other business. How often have we seen young men go to learn farming at some school-farm, or to some large farm in England or Scotland, where everything was in perfect order, and, after spending a year or two, have started for themselves, and in a short time were swamped, or nearly so? And what was the reason of this? Just because they thought that, by force of money, they could get such perfection in a year or two, forgetting that it could be, and was, only brought to such a state by years of toil and perseverance. Had they seen the improvements carried out they would have had different and better ideas of it: and if such farms as I have described had been started 30 years ago, how much land would now have been improved by them, and the young men taught on them! But there is no use in talking of the past, but try to improve the future, and I hope the club will be found advocating the improvement of agriculture and the stock of the country, by every means in its power.

MR. ANDERSON: You do not mean to say that the members of this club should take up some of those bad farms?

MR. DAVIDSON: They might do worse.

The Chairman, MR. P. C. DOBAN: You are assuming that if we had a forty years' lease we might do what you state in your paper. Doubtless, if that were general throughout Ireland, which at present is not the case, the suggestions thrown out in your paper might be acted on to a great extent.

MR. DAVIDSON: My observations particularly apply to the waste land of Ireland. In my opinion, there are few proprietors of waste land in this country who would not cheerfully give a long lease to a tenant undertaking to carry out the improvements I have endeavoured, somewhat imperfectly, it may be, to sketch out.

MR. BUTLER: Well, I must say that they would be great fools indeed, if they did not.

MR. ANDERSON: I really think it would be a hard case that a man should be placed in the position of settling down to reclaim and improve a quantity of waste land, as Mr. Davidson describes, without possessing the ordinary advantage of having some portion of it good as well as other parts bad. I need hardly say, from every-day experience, that, connected with farms in Ireland, there is what is called a tail. It is generally the case in this country, as I remarked before, that a man has some portion of his farm good and other parts bad, and in my opinion it would be much easier for a tenant to set about improving the tail, rather than undertaking the responsibility, labour, and trouble of reclaiming an entire farm. In the former case, one would assist the other. Mr. Davidson, in his paper, confines himself principally to the waste land of Ireland, and he proposes to set a fellow down on a poor spot without giving him the benefit of a good bit of land. Well, that is not a very pleasant prospect for an enterprising and industrious farmer, nor is it one that would be calculated to engage his earnest support and sympathies in effecting great improvement. In my opinion, what we want here is some stimulus to improve the tails which are generally attached to the farms of this country; for, after all, we have not got such large tracts of waste land in this neighbourhood. Few of us would like to be set down in the middle of a swamp or bog for the purpose of effecting improvements, which, however successful we might be in carrying out, might not be in the end of a profitable character. For my own part, I confess I would be afraid to do so, and I do not think many persons would like to run the risk of engaging in such a hazardous undertaking. If we could fall in and improve the tails of our farms, while in the meantime we were endeavouring to cultivate the other portions of the land in a profitable and beneficial manner, it would, in my opinion, be much more preferable. That is what we want in Ireland, rather than embarking in an enterprise fraught with so much risk and danger.

MR. DAVIDSON: That argument holds good with reference to what I said about the several matters to which you have adverted.

The Rev. MR. BAGOT: Do you know anything about the moor at Lusk, where certain improvements have been carried out under the government?

MR. DAVIDSON: Well, I cannot say that I do. With reference to what has fallen from Mr. Anderson, I have only to say that those waste lands could be got cheap, and when got cheap they could be improved with advantage and profit to the tenant.

MR. ROBERTSON: There was a case in Scotland some time ago, in which the improvement of waste land was undertaken and carried out in a most successful manner. It was commenced by the late Lord Kearnan, and the result was all that could be desired. He had a large tract of land, the surface on which was from six to twelve feet deep. Underneath there was a good soil, and he gave a lease to all comers for 99 years, at a nominal rent. He laid out his farms in lines, and at the present day nearly the whole of the bog has been cleared away. The bog or surface was floated into the river Forth. Well, now the result of that has been that at present it is worth three guineas the Scotch acre; and it is adapted for growing all kinds of crops. In this country there is no waste land that I am aware of, which is covered with soil of clay of that nature. I quite agree with Mr. Anderson, in reference to what he has said about the tails to large fields in this country, and the necessity that exists for improving the bottoms attached to the farms. That process, I may state, am carrying on on my own land at present. When I go

possession of it, there were about fifty statute acres in my bottom; but during the last five years I have got half of that under-crop, and the other half is in process of being drained, laying down rape and grasses, in order to stem the tough sod. All the crops which I have grown upon the land have been remarkably fine. I have grown turnips, mangels, and cabbages with great success on it. Indeed, I have had as much as 60 tons of cabbage to the acre off it, and the only thing I used was the ordinary farm-yard dung and a little artificial manure mixed with it. I may mention also the result of a like process on a farm with which I was connected, belonging to Mr. La Touche, of Harristown. The farm I speak of consisted of about 140 Irish acres. Part of it was valued at 5s. an acre when I commenced work on it. Well, there were £1,500 expended on it in draining and trenching, and much of it had to be dug with the spade. So great has been the improvement that was effected in the land, that it was let at 22s. an acre, and in addition to that, the man who now occupies it has an interest in the farm. I heard that he was offered £400 or £500 a few years ago for his interest in it. On that farm the drains were made 40 feet apart and four feet deep, and laid with tiles closed into each other. They are four feet deep; and from that state of facts, the upshot is that there is as much as 22s. an acre from a solvent tenant for those 140 acres. Now, that is a case in point to prove how the soils of this country could be improved at a moderate expense.

Mr. ANDERSON: We have also an example of that at Ballylin, to the extent of something like 300 Irish acres. In that case the land has been brought into a fair state, and into a paying condition, with a good, steady butt on it. I have no doubt that there are many persons here who have seen it.

Mr. BUTLER: Is that Sir Charles Coote's place?

Mr. ANDERSON: Yes.

Mr. BUTLER: Was it done by himself?

Mr. ANDERSON: It was. I have no hesitation whatever in saying that it is a paying thing.

The CHAIRMAN: The great impediment to drainage is the want of a fall to carry off the water.

Mr. DAVIDSON: To do so, they must clean the rivers.

Mr. BUTLER: The land about me cannot be drained, for that very reason.

The Rev. Mr. BAGOT: I heard that the drainage of the Barrow is likely to be brought forward in the next session of Parliament, and be dealt with in the same way as the Shannon has been. I think they are going to apply for a Bill to enable them to take the whole work into their own hands. I understand that they will throw the Drainage Board over altogether, and go in for a new Bill. With regard to what has fallen from Mr. Anderson, as to improving the tail end of a farm, I apprehend that there would be a difficulty in borrowing money from the Government for that purpose. If you have the tail end of a farm on any part of your property, and you come up and ask them for an advance to improve it, they will not give it, unless you carry out the system. Now, I hold some glebe land, and could borrow money, but I cannot drain it without the consent of my neighbour. It is necessary to get the consent of the next proprietor to join you in carrying

it out. Besides that, they will not give you it under a certain amount.

Mr. ANDERSON: I believe that £100 is the lowest sum they will give you. You must be under an erroneous impression as to the manner in which the drainage is to be carried out.

The Rev. Mr. BAGOT: How can you do it? You cannot get the fall.

Mr. ANDERSON: No doubt that is a serious obstacle. I was going to mention that there are two obstacles to the carrying out of the matters alluded to in the paper, and those are the want of a long lease, and the absence of farm buildings. If the proprietors would give their tenants suitable farm buildings, and leases for 99 years, I have no doubt but the waste lands of Ireland would be very soon considerably improved. These are the two great obstacles to the accomplishment of so desirable an object.

The Rev. Mr. BAGOT: And not only that, but you want arterial drainage.

Mr. ANDERSON: I think arterial drainage is not so serious a matter as the other two points I have mentioned. In my opinion, a man should not begin to improve another person's property without he has first got a lease for 99 years.

The Rev. Mr. BAGOT: I believe he only requires a thirty years' lease to get a loan from the Board of Works.

Mr. ANDERSON: He must have a forty years' lease to get a loan from them. I think it is a pity that we should not pass some resolution to-day in reference to our discussion on this important subject. In similar meetings in England a motion is usually passed as to what are the views of the members of the club on the question before them. If we would pass a resolution to-day as to the necessity of farm buildings, and giving a long lease, I think it would serve a purpose: our doing so would be to arrive at something definite.

The Rev. Mr. BAGOT: By your present rule you cannot pass a resolution without having first given proper notice of your intention to do so. The reason of that is obvious. Six members of the club might meet together, if that could be done, and pledge the entire 150 members to their idea; while, on the other hand, a member gives his individual opinion, and he has the advantage of having it ventilated through the public press.

Mr. ANDERSON: In a case like this, if the voice of the club went forward in the shape of a definite resolution, I think it would have a certain effect.

The Rev. Mr. BAGOT: I think the members of the club will say that we do want better farm buildings, and some encouragement for undertaking the improvement of waste land.

The CHAIRMAN: There is a perfect bar to that without the two things you allude to.

Mr. ANDERSON: Well, then, I will propose a vote of thanks to Mr. Davidson for his able paper, which contains many useful hints and remarks, that I hope will be turned to some good account.

Mr. ROBERTSON seconded the motion, which was put from the chair, and carried unanimously.

The proceedings then terminated.

THE EDUCATION OF CHILDREN EMPLOYED IN AGRICULTURE.

At a recent meeting of the Cirencester Farmers' Club, Sir Michael E. Hickey Beach, M.P., introduced the subject of "The Education of Children employed in Agriculture." The Rev. James Fraser, assistant-commissioner under the Royal Commission on the employment of women and children in agriculture, who is at this time engaged in making inquiries in Gloucestershire, attended the meeting, and there were present many of the leading agriculturists of the district. Sir Michael Beach divided his subject as follows: 1. To consider where the great want of education exists, whether in large towns or in the country. 2. Whether the present regulations under which the Government grant is made are such as enable the scholars to profit as much as possible. 3. Whether some improvements cannot be made which shall insure a regular and longer attendance of the children, and

whether the instruction now given is such as it might be. After giving some interesting statistics, he said that the agricultural population was certainly not as badly educated as the town, and that he thought the Government grant was given at present too much to the towns. He threw out several suggestions as remedies, one of which was that every child under thirteen should be compelled to attend school so many hours in the year, so that advantage might be taken of the winter months, and concluded a very interesting address by saying he was sure that farmers would find an educated labourer worth more wages than one that had received no education. The rev. James Fraser said he should, for his part, be contented if children could stay at school until they were able to read intelligently and with facility, which he thought the majority could not do when they left. He also gave the

results of his experience resulting from the many inquiries that he had made, and stated that the average amount of wages in Gloucestershire was only 10s. per week. After an animated discussion, the following resolutions were unanimously adopted: "1. That in the opinion of this meeting the State aid afforded to education is not, under the present condition of such aid, fairly distributed between the schools of the town districts and of agricultural districts, and that the advancement of education in rural districts is thereby retarded. 2. That this meeting,

while it is of opinion that the extent of education in the agricultural districts compares favourably with that in town districts, is still of opinion that much remains to be done to render the system of education of the children of the agricultural poor efficient, particularly with respect to the attendance at school of young children, it being the opinion of this meeting that children should not generally be employed in farm-labour under the age of ten years, but that the half-time system is not applicable to farm-labour."

AGRICULTURAL CHRONICLE.

[TRANSLATED FROM THE FRENCH OF THE "JOURNAL D'AGRICULTURE PRATIQUE."]

A survey of the position of agriculture—The most salient features of rural progress—Economic progress the emancipator of production and commerce—The new spirit of the rural districts—Progressive application of the physical and chemical sciences—The law of restitution to the soil—Supplementary manures—Manure (dung) indicates the union between the production of plants and that of animals (cattle)—Improving and improved culture—Plants assimilated to chemical products—Dreams of the future—Utility of various speculations—Zootechnical progress—Bread and meat—Influence of the abattoir—Animal speculations in France and England—Progress of agricultural mechanics—Success to steam—Objections—The morcellement (subdivision) of the land and the introduction of steam ploughing—They interfere with our freedom of immobility—Foreign competition—Pretended gratuitous force of cattle—Many chords in the arc—The French Hippic Society and its annual meeting.

As we are led to understand it, our work as chroniclers is not limited alone to the expositions of hebdomadal facts, more or less important, which constitute the agricultural movement of our time. We seek, also, to recur again from time to time to the principal facts, the aggregate of which appear to us of a nature to characterise the general position of rural economy. Taken singly, many of the facts would leave no memorial after them, no instruction. It is in grouping them, and putting in relief their points of contact, that we come to give them a significance, which, sooner or later, calls them to make an epoch in science or industry. Such is the career of improvements in all the branches of human activity. There are characteristic periods in which the people, if drawn, as they may be, into the movement, find the need of measuring the distances traversed, and of agitating the questions raised by the new circumstances. We are now at one of those moments. Let us endeavour to point out the questions in the order of the day, which will form our chronicle.

The more we closely follow our agricultural movement the better we perceive it employing itself on four principal branches of studies. And, first of all, let us point out the immense economic progress, which, regulated by the idea of emancipation of production and commerce, tends to erect Agriculture into Manufacture, working for the exchange of its products; a manufacture seeking to free itself from the administrative tutelage, to be at liberty to manage its own affairs. Thus, by the force of things, is created in our rural districts a class of earnest producers instead of one of needy petitioners. Thus daily disappear that abnormal cultivation which the spirit of administrative regulations had sanctioned, to oppose the law of climates. Thus was substituted more and more the fertile principle of the division of labour and cultural specialisations, for the anti-economic principle of agriculture supporting itself for want of roads and markets, by producing all and consuming all upon the spot. This progress is full of promise; it will substitute free agriculture in the place of protected agriculture; it will develop the resources of competition, cause the antagonism of cities and country to cease, and increase the number of men who know how to exercise their rights not less than their duties. Let us, then, invigorate the economic progress that has become impotence, solitude, silence in the rural districts; let us develop that progress; and French unity, at present weakened by the backward state of the most numerous of our population, will soon assume proportions which beyond anything else will be our strength both at home and abroad.

In another order of facts, the agricultural movement is characterised by the progress of the chemical and physical sciences applied to the cultivation of the soil. The laws of vegetation have been carefully studied; we know the substances that enter into the composition of plants, and from this knowledge we have deduced the general law of the restitutions which agriculture is bound to make to the soil in order to obtain the largest amount of crops. The science of manures has made a considerable advance. It has demonstrated the powerlessness of agriculture, which considered farm-yard manure as a complete compost proper for all soils and all plants. It has proclaimed this truth—that improving culture is not always and everywhere that by cattle-dung alone; it asks not of the manure from whence it comes, but where it goes, what it costs, what time it requires in transforming itself into crops; it is, in other words, that culture which the soil completes with carbonates, phosphates, sulphates of lime, alkalis, carbonaceous and azotous matters; for it is by all these matters, rendered assimilable at the most useful moment, that agricultural plants yield their largest gross products. Agriculture owes many of its greatest advances to these teachings of science; and if it is true that by a harmonious law, which establishes the happy union of the productiveness of plants and that of cattle, the dung remains as a feature of union between these two elements of agriculture now the most generally esteemed, it is not less evident that we have learned to create for ourselves new resources by the employment of manures auxiliary to the dung. To these auxiliary manures improving agriculture is indebted for a powerful means of devoting the first manure on the poor soils; whilst on the other hand, improved agriculture—that which marks the *summum* of intensive culture—owes to it a not less powerful means of increasing the useful effect of its manures, however rich they may otherwise be. It is said that a day will come when agricultural chemistry will make plants of all kinds—a day in which the cultivation of cereals and manufacturing plants will be able to free itself from the necessary evil inflicted by cattle, and when, by the rigorous application of the specialities of cultivation, there will be farms exclusively for wheat and others exclusively for forage plants. To put in circulation such predictions is perhaps to deny the realities of the future. But as to the present, and in order to remain within the limits of palpable objects, it ought to be the conviction of all the agriculturists of progress that, even with the most useful mineral and manufactured manures, agriculture may, by supporting itself principally upon farm manure, profitably resolve the problem of the abundance, variety, and safety of its productions. There are so many vicissitudes, both atmospheric and commercial, acting upon agricultural products, so much utility in setting off again in many seasons, the labour and the crops, that all leads to the belief that agriculture will, for a very long time, still depend upon the combined production of plants and cattle.

Zootechnic progress deserves also very special notice. It was not enough that bread was the base of the alimentation of the most civilized people; a high degree of civilization required the substantial support of butcher's meat. This want of meat has even become of so much importance that the oxen and sheep of the ancient economic régime has had to be regulated so as to produce more meat in a given time. Pressed more than others by their numerous population, more influenced than others also by the herbivorous aptitude of their

soil and climate, the English have advanced beyond other people in the transformation of their cattle-preparing for the slaughter-house; and soon France must follow in the same track, without, however, carrying to the same extent the precocity and special conformation of her oxen and sheep—the producers of meat, leather, milk, and wool. In these respects, each of the two nations has necessarily acted for the best in its own interests; and if England, powerfully favoured by her soil, climate, and economic position, has been enabled to produce bread by meat, France more varied in her productions, must content herself with adopting the English system, in her districts of abundance of forage, but, on the other hand, to submit to a different animal speculation on account of the numerous mediums in which her agricultural manufactures are conducted. It is indisputable that our management of cattle is making great progress, and that those parts of the country in which agriculture feeds the greatest number of animals are those where they obtain the heaviest crops of grain.

The contingent brought to the work of progress by agricultural mechanics is, beyond dispute, one of the great means of action, by which the aspect of our rural economy has been changed. Aratory implements, thrashing machines, harvesting, dressing, and mowing machines comprise together a working apparatus, the employment of which are now fully established with us. The steam engine has been introduced upon the farm; and we see this machine, which after remaining a long time confined exclusively to the interior service of rural affairs—that is to say, the thrashing, the treatment of straw, forage, roots, and grain—advance towards the ploughed lands and the ordinary roads. There are locomotive steam engines which profess to resolve the problem of transporting goods cheaply. There are others which, with the same end in view of lowering prices, endeavour, to a certain extent, and in certain situations, to substitute their work for that of horses. What is the feature of this new power—steam applied to the cultivation of the soil?

If we were to believe the unfavourable predictions respecting it, steam ploughing is incompatible with the divided state of the rural property in France. It must be left to the country of large estates, to the Landes and Steppes, to England, Rumania, Hungary, and America. This is not all. Steam culture, they say, will always be more expensive than animal culture, since, in a well-understood rural economy, animals can work gratuitously, if not with profit. In this point of view, consequently, steam cultivation would come, according to its adversaries, most inopportunistly. We begin, they say, by employing numerous cattle; and we are able to produce economically butchers' meat by animals serving two purposes, namely, reaching the slaughter-house only after having drawn the plough. Why do we offer the hand to the steam engine? Why allow a competition amongst agricultural teams? Why reduce our oxen to the condition of cattle for the slaughter-house? Why condemn them to repose, when working will add a finer quality to their muscular system?

Such, if we have omitted anything, are the principal objections urged at this time against the introduction of steam cultivation.

With respect to the obstacle of territorial subdivision, it is evident that infinitesimal agriculture is out of the question in the matter of steam culture, for it is all that it can do to use the common plough. Let us pass it over, and take the mass—that is, the large and the medium cultivations—with their system of entanglement of land to a greater or less extent. Is it that steam culture cannot be introduced there by contract, as is done in the case of thrashing by the same means? Are there none now of those who undertake that work, transporting their locomotive machines from farm to farm, and who, in spite of their numerous staff of workers, can only employ their machines for two or three months in the year? Would not these men, who are in possession of a machine which lies idle nine or ten months of the year, be ready some day to apply it to the plough?

For ourselves, we believe that the profession of ploughing by contract will be soon adopted, and in this our expectation is supported upon a very decided project, of which we have received information. Therefore it appears to us that there is no real obstacle in the subdivision of the land, and we even believe that steam cultivation, however little it may yield to certain improvements, will in its turn become itself an obstacle to the too-great dismemberment of rural property. Whilst

agriculture has had only the plough and the spade, it has been possible to carry the division of the soil to the last point at which culture by the plough and spade was more or less remunerative. But the day in which the working of the soil can be economically performed by very powerful machines—that day these machines will have a voice in the chapter of the question of territorial subdivision. Evidently then, but only to a certain extent, they will alter the conditions of equilibrium between the large, the medium, and the small farming; for the more we shall advance towards the generalisation of the principle of the division of labour, the more will agriculture become organised to produce cheaply. The small hand-culture is not the last effort of a civilisation which embraces a numerous non-agricultural population; and if the culture by animal power has shown a very great progress in this respect, we must not think that steam cultivation will not also bear its part in solving the problem of cheap agricultural production.

But we go further. We say that we must despair of the agricultural future of our richest countries of the present day, if the subdivision of the soil constitutes an absolute obstacle to the adoption of large machines. Let us be upon our guard. Between the countries the most advanced in wealth of all kinds, and those possessing virgin soils; between the countries with territories of the greatest value to the owner and the tenantry, and those of the lowest value; between countries with numerous populations, of large incomes, and large taxes, and those with small populations, small incomes, and small taxes, there is no longer any distance. Let us suppose therefore that, by the harvesting machine and the steam plough, speculation is energetically set to work upon these latter countries—what competition would then be more formidable than that of the past? that of importations upon our old market!

In fact, we are not free. Machinery will rule, sooner or later, the agricultural situation, as it has for a long time governed that of manufacture, and it is wise to study the subject. They talk of the gratuitous power of cattle, and they quote on that subject speculations, in which animals employed in labour, with a purchase price of 400 francs (£16), for example, have been resold the following year at 500 francs (£20). There is therefore in that case a plus-value of 100 francs, which it is just to reckon against the expenses of the team. But does it follow that such animals, even including their dung, work gratuitously? We dare not countenance such an illusion; and it appears to us very difficult that in speculations founded upon the increase in value, corresponding with the increase of age or strength or weight of an animal, the week's work of a horse or a working ox should return at least from two to three francs. On the whole, every amount of animal power must include expenses of conductor, interest of money, risks, food, harness, medicine, &c.; and as to the principal element of expense, they estimate the corn, roots, and forage at a price at which the charges of cultivation are balanced without either loss or profit.

We admit, therefore, that working cattle increase in value at the same time they labour. Well purchased and well resold, such are the extreme terms of this speculation, in which many agriculturists excel in a very high degree. But we believe that, taking everything into the account, they do not thus obtain *gratuitous power*. It is all very fine, on these conditions, to reduce the price of labour from 20 to 30 per cent. In a word, it is with this speculation as with all others: it is only lucrative because it is not general—because it conciliates many interests, as the breeders who rear them, the farmers who train them, the graziers or purchasers who seek for aged animals. Here again we must not generalize, and it remains as a final truth, that the more strings agriculture has to its bow, the more it will have the means to extract the best possible share from each of the numerous situations in which it operates. Steam-power is one more auxiliary. Honour to the pioneers who, at their own risks and peril, seek to facilitate the first steps of the new-comer.

The French Hippic Society is not wasting its time. It will from this period have its annual exhibition in Paris, for a decree of 23rd November, 1867, issued by Marshal Vaillant, Ministre of the Imperial House of Fine Arts, orders:

“Art. 1.—The French Hippic Society is authorised to establish annually at Paris, in the Palace of the Exhibition in the

Champs Elysées, a show of horses of French breed, which shall close on the 15th April, inclusive.

"Art 2.—The present authorization is given for five years, to commence on the 1st January, 1868."

The admirers of horse-flesh set us a good example (?). They associate and assume a position on the question of meetings due to private examples. In this respect we cannot too highly approve their work, but we must agree that the horse is, for

those who are disposed to make experiments, a better point of union than the other domestic animals. Method, species, fashion play a principal part in hippic affairs. Far from blaming this turn of mind in *some of the world*, we entertain hopes that it will reach the last limits of English habits; for in England, from the man of horse to the man of oxen and sheep the distance is not great. Courage, then! and good success to the Hippic Society.

THE WILLOW, THE OSIER, AND THE SALLOW.

The cultivation of these plants differs in many ways from that of other shrubs and trees, and therefore for the benefit of those who may have an unmanageable swamp to crop I would advise them to consider the willow tree and see how well it grows in such places, and comparing the value of the produce of an acre of osier-bed with that of an acre of oats or barley, let him draw his own conclusions. First of all, let tenants cast away all ideas about planting trees for the landlord, for assuredly he who plants willows plants only for himself, as the crop is annually reaped like corn; and secondly, I must name the important fact, that no plants will have to be purchased, for the willow-tree grows freely from cuttings, therefore a bundle of tall, strong, unpeeled rods, purchased at the basket-makers, to begin with, may be reckoned as the seed-corn for a willow plantation, and after a year or two the "top and lop" will be sufficient stock to plant half a parish with willow belts. A little attention on the part of the farmer's leading man will be necessary to cut the sets properly; they will do to be cut like potatoes, with not less than one eye to each set, and when planted this eye must be left above ground, and the rest of the rod or shoot to be as firmly fixed in the soil as it can conveniently be got, and if each set were inserted in mud or clay, or had a lump of soft clay as large as an egg, put to its root end it would be all the better for it against dry weather. Thirdly, I may state that as it is an idiom of our language to grow "like a willow," no one need fear trying his hand with this homely piece of arboriculture.

But what is the large farmer, the small farmer, or even the cottier to do with the willow when he has got it? If you were to take the willow rods away from the thatcher in some parts of England, he would be a ruined man, for where he cannot get hazel rods he binds on his thatch with willow wands.

The basket-maker is almost totally dependent upon the produce of this tree for his raw material, and the cooper uses them largely for hoops. When the wayfaring man has left Bristol for Exeter by rail, he will see in the level meadows beautiful samples of small trees with stiff trunks and slender branches in the autumn, and in the winter the branches disappear, and at that time the stumps appear like tall milestones, as if they marked some boundary line; these are willow pollards, yielding a crop of rods either every year or every second year, just as the farmer is inclined to grow large rods or small ones for thatching or other purposes; these pollards are generally grown on the banks of the stagnant water-courses, and the use of the tall stem or trunk is to keep the cattle from browsing the young shoots, and where pollards have to be grown in places exposed to cattle it is necessary to plant trunchions or thick branches of willow, about 6 feet long.

My object in writing this paper is, to call attention to the willow as a plant admirably adapted for shelter, especially from the sea-breezes, and as our island have necessarily a large sea-board, which I may say in many instances is swept bare and rendered barren by winds and storms,

I cannot do better than show how we may oppose a cheap and efficient barrier to the blast. There are only a very few plants indeed that will live in the teeth of a sea-wind, and anything tall and stiff would be uprooted by its own leverage; but see here how admirably the willow comes in, for it bends to the blast, and long before the winter has got to its depth the willow has cast its foliage, as if it had shortened sail anticipating the coming blast. Those who have the happiness to live inland can form very inadequate ideas of the life led on the exposed seaboard, and I was very much surprised when I first felt the force of the wind in Devon, when the breeze was off the water, after I had been living in one of the midland counties, and taking this measure of the stormy wind as felt in one of the mildest counties in England as a fair sample of the rest, I need not refer to the extremes such as the winds on the western isles of Scotland, or that on the west coast of Ireland, where, if wind-mills were wanted they might be made engines of no small power. There is a peculiarity in the look of a certain class of plants that are hangers on, if I may be allowed the expression, about the ends of the earth line, as if they were the fringes of its mantle: such plants have a "sea air" about them, and seem slightly tinted with the sea-green colour of their watery neighbour.

The greyish hue of certain willows is quite in this style, but still practical men have proved long ago that the grey willows are not the best to withstand the immediate effects of sea-air and sea-spray, for during stress of weather I have found my lips salted with sea-vapour, and therefore plants selected for such situations must be able to cope—occasionally at least—with a slight dose of seawater with impunity. We therefore gladly turn over another page of Nature's book, and see a whole host of plants which spend about half their time in the air and the other half in water, clinging to the face of a whinstone rock for a place, but certainly not for food: these are the *Dulse* and other seaweeds living in sea-air and fed by seawater, and we naturally inquire, why they are not green like other herbs and trees, but are all of a blackish-red colour; but instead of wrangling unprofitably about that little matter, let us just borrow the idea as it stands, and see the value of such advice, for as the seaweeds are very low indeed in the scale of organization their simple forms seem to indicate that they are really modelled to suit the extraordinary circumstances in which we find them placed, and hence we turn to the blackish-red-coloured willows commonly called *sallows*, and they have been found by experience to stand the sea-breeze better than any other plant having the same tree-like character. I am not writing a history of willows, for that would fill a large volume, but yet I may remark that botanists have stated that trees frequently take the form of their leaves; and if so, by this simple mark a person totally unacquainted with the extensive genus of willows, seeing the long, narrow, graceful leaf of some willow, would be able to know pretty nearly what the character of the tree would be; and on the other hand, seeing the round leaf of a

willow growing out of some ditch-bank, he would recognise the woody, worthless character of the species—a stunted scrub with many short branches and brittle wood. As for willows or dulce-coloured willows, they cannot readily be mistaken for any other kind, and in planting them for belts or hedges, or, as planters call it, for nurseries near the sea, they should be put in unreasonably thick, and not by any rule that could apply to the planting of other trees, for in their peculiar situation there is little to be feared for the want of air or the “drawing” up for want of ventilation. A landward belt of grey willows inside the belt of willows might be added some time after the willows had got established and were able to nurse their fair sisters. The golden willow grows to a middle-sized tree, and is one of the most beautiful plants in cultivation; there is one in the Glasnevin Botanic Garden, Dublin, some 20 or 30 feet in height, and of great beauty. In winter and early spring this truly British tree has a fine straw-coloured hue, whilst other trees are clad in sober grey, and a belt or hedge of such trees reared at little or no expense could not be surpassed in real beauty by any hardy ligneous plant we possess for at least five months in the dulllest part of the year. I need not waste a line to say how willows may be grown inland for shelter

or in wet places as osier beds for profit, as it would be only a repetition of the same tale to state how willows with grey bark, willows with yellow bark, or willows (or willows) with black bark may be cultivated, for they are all so easily propagated by eyes, twigs, or truncheons without roots. I may mention that some willows grow naturally in sand, and may be seen disputing the situation with the bent-grass on the sea-beach; others grow on the bleak tops of the Scottish hills, and one tiny willow creeps close to the line where vegetable life dies out from sheer cold.

It must be borne in mind that stock of all kinds are fond of the leaves and young shoots of the willow, and will greedily devour them if left unprotected; and I have been told by an unquestionable authority that he had seen the young twigs of the willow, in an unripened state with the leaves on, cut and dried for fodder in Switzerland, and as I am addressing agriculturists who have already tasted the sweets of the gorse plant as fodder, I thought I might hint at the willow being a much more manageable plant than his prickly brother. I have wilfully avoided touching upon the weeping-willow, as it is rather delicate, and, although exceedingly ornamental, is not an economical species, and belongs to gardening rather than farming.

ALEX. FORSYTH.

FOOT-ROT IN SHEEP.

The following, which is the concluding letter of the correspondent of the *Sydney Morning Herald*, treats fully of the process of cure for foot-rot: I may, in the first place, dress those that I left just removed for lameness from the flocks of a healthy run. I do this as a preventive: therefore, remove the soil or other obstructions from the claw, get the feet perfectly freed from dirt, and apply tar to the cut. One or two dressings with this simple but efficacious application will soon restore the feet, provided the feet be daily cleansed before the tar is used, and the sheep have but a limited space to travel for food. A very serviceable plan for the latter purpose I have found to be fencing-in a small space as a reserve at each station for lame sheep that do not require to be more than thus simply dressed. This has its advantages over the plan of letting them feed round the place, under the eye of a “supposed” watchman, who as soon as possible gets rid of the trouble of tending them by allowing them to mix with the flock as it draws home; or they wander away, to be probably lost. I now come to the “quarantine” lot—these should, if necessary, be divided into two classes: first, those that are but slightly affected; next, those that are suffering from the disease of long standing. With the first class the symptoms will be confined to the foot, but with the others it will have developed itself above the foot, and round the first joint. To begin with the first class, I will suppose them in a pen, their feet sufficiently soft to be easily pared: the operator with a sharp knife removes all outgrowths of the claw, and by a free but judicious use of his instrument gets at the seat of the gathering. I here advocate bleeding. Having trimmed the foot and made it ready to receive the dressing, he passes it out into a lane which has, through its whole length, a trough containing this dressing, of the component parts of which there is, as with the mode of application, a diversity of opinion. I offer mine, and in doing so speak from a knowledge of its efficacy, yet not presuming to question the equal efficacy, to others, of their treatment. The wash I should apply would be a strong tan-water, or “tannin” extracted from the bark either of the black-wattle or myall-tree, the stronger the better, and to each gallon of this extract add one half-pound of sulphur. In this mixture each sheep should stand not less than fifteen minutes; to do so and not delay the work, the lane with the trough should be divided in the middle, and the passage of the sheep through worked similar to that of an ordinary wash-pool; or, say, the first ten sheep are dressed, and in rotation are placed in the lane; pass them on to the upper division, to remain until their space is required for the next ten, when they are let into a small yard

thickly covered with lime: in this they are kept for one hour after the time the last sheep is mixed with them.

If there should be more sheep to handle than can be done in one day those dressed the first can remain upon the grass until the second lot are let out, when they are passed through the trough and lime as before; this process to be observed daily for a week; give them a few days to show the effects, re-examining them: if necessary, continue the same line of treatment, and, by a steady perseverance, the disease from these sheep will be removed.

The most difficult lot yet remain to be operated upon. I will suppose them as having been subject to the knife in a similar manner to the former, and now stand in the trough of “dressing;” but this is very different from the first—here we have a mixture of strong vinegar, to every three gallons of which has been added one pound of blue vitriol, dissolved and intimately mixed. A friend has mentioned verdigris instead of vitriol, as being more powerful; but I never used it. In this the sheep should stand ten to fifteen minutes, and then pass on to the lime-yard. A prudent act is to place rock-salt upon a frame, say eighteen inches high, in this yard; the sheep will be engaged by it, and it will tend to keep them from lying down.

This process to be daily used for the first ten days, when longer intervals may occur, until such time as they are fit to be subject to a milder treatment, then the cure may be completed with the “tannin” and lime.

Should there be any cases that will not yield to this treatment we can try an application of nitrate of silver, dissolved in kerosene oil, put on with a brush (instead of the wash), still putting them on the lime; if one or two dressings effect no good the case may be pronounced incurable, then bleed in the jugular, and save the skin.

I would remark that a more speedy effect of any medicine is arrived at if we take warm, dry weather for its application—the absence of all dews from the grass where the sheep must necessarily feed is a great desideratum; yet generally speaking, either during or immediately after rain is the time selected, simply because the claw is now soft and easily cut; but the mud and wet to the foot after dressing militate against its effects. The system of softening the feet by artificial means during the previous night is well known; any novice can obtain the information by asking or by observation.

In conclusion, I offer these remarks and suggestions with all sincerity and with a desire that they may be productive of benefit to some of your readers. I only ask those who would feel disposed to deery my treatment, to first try it before doing so.

THE SMITHFIELD CATTLE SHOW,

BY THE OLD NORFOLK FARMER.

"Now to our muttons"—I use the plural as most proper to the occasion—says the city gourmand, having left off very abruptly at the end of the bovine species, in my former letter. I forgot, however, to mention the *Eland* amongst the oxen, to which race of animals I suppose it is somewhat allied. The fact is, the gentleman was so popular that he was constantly attended by a levee so dense that all my efforts to obtain a sight of him were in vain, and I was compelled to leave the Show without knowing by personal inspection even the colour of his coat. I am led, however, to conclude, from the description given of him, that, barring the novelty of his appearance, there was nothing in him to induce a farmer or grazier to undertake introducing him into the cattle-yards of England as a source of profit. So much, therefore, for what I did *not* see.

The Southdown sheep—my special favourites—shone quite as conspicuously as ever in the Show, and, I am certain, by what I observed, attracted the attention of all the ladies who possessed any taste. Their delicate coats may have been somewhat *trimmed* for the occasion—for I have heard of such things—but it is no small merit in them that they are capable of bearing the operation of the hair-dresser without suffering in their personal appearance. A "beauty without paint" is far superior to a made-up woman, and a handsome sheep needs no trimming to set it off. I should always suspect that it is done to hide defects in the symmetry, and were I one of the judges I should never consent to give a prize to sheep that had undergone the operation. Our famous exhibitors, Lord Walsingham, the Duke of Richmond, Mr. Rigden, Sir W. Throckmorton, and others have nobly sustained their former reputation as Southdown breeders and graziers, for finer sheep were never exhibited than those sent this year. I have a tolerably fair eye for a perfect animal of any species, but on the present occasion I did not attend the show as a critic, but rather to admire the general excellence and deprecate the occasional want of it, in the animals on view. It is not surprising that the noble exhibitors should obtain prizes. They have all the advantages of wealth and leisure to employ competent attendance, and to give their time to the subject. The great merit attached to them is that they do thus enter, upon so useful and so national an undertaking, and that they do not consider it beneath them—as is the case with the French *new aristocracy*—thus to lead the efforts of the agriculturists in the improvement of the breeds of our domestic animals. It is this mingling of *our aristocracy* with the agricultural body of the kingdom that has raised the character of the profession of husbandry to a high pitch, and encouraged the union of science with its practice. But this is a digression. The Hampshire Downs are the South Downs on a larger scale, and so are the Shropshire. Neither of these were in great force, nor was there any general excellence in either class to claim notice. The Oxford Downs, on the contrary, were all, almost without exception, good, except that some of them were too fat for ordinary stomachs. The mountain sheep, as usual, looked greatly astonished at their position, and seemed inclined to dispute the right of the company to stare them out of countenance. They certainly were not in their element, and no doubt longed for a taste of the sweet grass upon their native hills, instead of the dry

hay they were compelled to eat. I was glad to see the (to me) familiar name of Overman again as an exhibitor, although his relative at Weasenham has disposed of his entire flock of Downs. I remember seeing his grandfather's sheep at Holkham Sheep Show more than sixty years ago, and his successors have kept up the practice ever since. No wonder at the superiority they display in the art of breeding and fattening of animals of all kinds!

The long-wooled breeds were not all so fully represented as usual, the Cotswolds especially; but, generally speaking, the quality of most of them was good. The Leicesters, of course, both full and half-bred, were most in force, and appeared to me to display great excellence. The tables are remarkably turned with the long and short-wools within the last thirty years. Formerly, the short-wool was nearly double the value of the long; but now, owing to the change in the fashion, improvements in manufacturing, and above all, the immense quantity of fine wool now sent from Australia, that kind now bears only about two-thirds the price of the long-wool. Such is life in sheep-breeding as well as in everything else. On the whole, the show of sheep was good, and fully sustained the character of the institution, which has a just title to be styled a national one. Whatever advances have been made in France or other countries in the establishment of similar institutions, they but follow in the steps of the British farmers, as these must date the celebrity of their system of agriculture to the practical encouragement held out to them by that really patriotic sovereign *Old Farmer George*, under whose auspices the Board of Agriculture was established, which was the parent of all those now in existence.

"Place the pigs," as Paddy says, we must take them next. And first, I think there were fewer of them than usual; but those exhibited were marvels of precocity and fatness. I never look at this part of the Show without imagining what a strength of stomach it must require to feel a relish for such food. The small breeds, like those belonging to Her Majesty, were much the most attractive; and such also were those of Mr. Coate. The older classes were masses of fat; and it is wonderful how the gluttons can manage to accumulate so much fat in so few months. Take, for instance, Mr. J. Treadwell's pen of pigs under twelve months old; I could scarcely guess at their weight, but certainly both they and their keepers had made good use of those ten or eleven months to lay on such loads of meat. From what I saw and heard of the show of pigs, it was not near so good nor so large as usual, but there was always a very large attendance of visitors, especially of females, who always crowd that department of the exhibition.

Horses are not amongst the animals admitted to the Show; but a paragraph appeared in the *Mark Lane Express* of last week, on which, although another digression, I wish to make some observations. It refers to a feast upon horseflesh that went off last week at an hotel at the west end of the town. This being supposed to be the first time at which the use of horseflesh was adopted as an acknowledged article of food in England, it may prove interesting to those who have considered, or may hereafter consider, the subject, to learn that eighty or more years ago an experiment of the same kind was made on the following occasion. The father of the celebrated William

Godwin, who was then a Dissenting Minister at Guestwick in West Norfolk, had a three-year-old colt, which by some accident broke his leg in so serious a manner that he was instantly put out of pain by having his throat cut. Mrs. Godwin, who was a strong-minded and very superior woman, and above prejudices, availed herself of the opportunity of testing the quality of horse-flesh as food. She accordingly employed a regular butcher to flay and dress the carcase in exactly the same way as he would do an ox. She then sent joints of it to various friends, amongst whom was my father, who was one of Mr. Godwin's hearers. I was too young at the time to know the result personally, but I have frequently heard my father speak of the meat as quite equal to that of a bullock, and that the experiment was a complete success. So far for the *rationale* of horse-flesh as human food; notwithstanding which, I feel persuaded that it will never become a common article of food in England, on many accounts. In the first place horses are too dear, if young ones are selected, so that the beef could not be sold at a profit under the price of ox beef. And to fatten old horses for the purpose would be distasteful to most persons except the very lowest, who, in fact, are treated with that kind of food to a considerable extent at the inferior eating-houses of the metropolis, who purchase all the

rounds and other *best* joints of the knackers, and convert these into soup, &c., at 2d. per quart. But the strongest objection to the general use of horse-flesh amongst the middle-class of this country is, the feeling of kindness and affection that most owners of horses entertain towards the animals that have carried them safely for years perhaps, or at any rate are valued for their useful qualities. I have shown that *young* horses are out of the question as beef, and their useful properties increase for the first ten years. After this, if they remain in the hands of the same owners, which is frequently the case, there is generally a tacit kind of relationship, as much as there is between man and the dog. I know nothing of the gentleman who coolly rode his twenty-year-old horse up to town and then killed and ate him, or at least a part of him. Certainly he possesses no troublesome sentimentality, and I confess I like the practice better of Howard the philanthropist, who had a paddock allotted to his aged horses, in which they enjoyed a dignified retirement for life. This was humanity, the other special economy, more honourable in the breach than in the observance.

London, December 30.

[The "humanity" of suffering a worn-out horse to die of old age in a paddock has been seriously questioned.—EDITOR.]

FARMING CUSTOMS AND COVENANTS.

At a meeting of the Gloucestershire Chamber of Agriculture, in the absence of Mr. Holland, M.P., Captain De Winton presided, and called upon

Mr. CLEMENT CADLE, who, in introducing the subject of "Farming Customs and Covenants," said that he and Mr. H. Bubb had obtained the Royal Agricultural Society's prize for an essay on the same subject, and that some time ago he received the following letter from Mr. Frere, the editor of the Society's Journal:

"Paston House, Cambridge, Sept. 14, 1867.

"DEAR SIR,—I am very glad to hear that you are willing to act on my suggestion for perfecting the reports contained in your prize essay on the customs and covenants of the several counties, by seeking for further information from the best local authorities. The work, if you can accomplish it, will be highly valuable and interesting to all connected with agriculture in its practical or its legal bearings. It is impossible for any one writer to have full knowledge of all such details. I shall feel indebted to any gentleman who will second your efforts: I may venture to say as much for the Royal Agricultural Society. We will take care that communications are approved by their authors before they are printed, and that they are duly acknowledged. "Yours truly,

"P. H. FRERE.

"Messrs. Cadle and Bubb, Gloucester."

In consequence of that communication, he had sent the following to the various chambers of agriculture, as well as to the secretary of that chamber:

"Land Agency Office, Gloucester, and (by appointment) at London,

"Office, 11, Salisbury-square, Fleet-street, E.C., Sept., 1867.

"SIR,—Having been awarded the prize for an essay on the Farming Customs and Covenants of England by the Royal Agricultural Society, who further wish to have the subject made as complete as possible before being published in their Journal, we shall feel particularly obliged if you will lay those relating to your county before the committee of your chamber, to revise the same, and ask them to make any addition or alteration they may deem necessary; and if, as is sometimes the case, there are different sets of customs in different parts of the same county, a mention of each will be esteemed a favour;

and your having given us the information and revision will be duly acknowledged. And remain, sir, your obedient servants, "CADLE AND BUBB.

"A. C. Wheeler, Esq., Gloucester."

This letter was read at the last meeting; and he was requested to bring the subject of it forward in the shape of a paper at the present meeting. Mr. Cadle then read the following passage in his essay, as to the customs of Gloucestershire, premising that the information chiefly came from Mr. Villar:

"The takings in this county are chiefly, on the Cotswold Hills, at Lady-day, and, in the Vale, at Michaelmas; but in those parts of the county which border Hereford and Monmouth they are sometimes at Candlemas. With a Lady-day taking, the incoming tenant takes to all the hay and straw at a consuming price, and pays for all acts of husbandry done to the root-crops, with the full amount expended in artificial manure during the last year, and for all winter ploughings, manurings, young clover, &c. When bones are used, an allowance of three years is made. With a Michaelmas tenancy, the incoming tenant takes to all the hay and straw at a consuming price, and pays for acts of husbandry and for manure used on the root-crop. The outgoing tenant has the use of the barns, &c., to thrash and market his corn, make his cider and perry, and for other work. The Candlemas takings are the same as in Herefordshire. Most of the Cotswold farms are let on lease; but the farms in the other portions of the county are more generally held as yearly tenancies. The landlord usually makes the repairs to the homestead, the tenant doing the hauling, and finding straw for thatch. The tenant also maintains the interior of the house, and repairs the gates, fences, &c."

Mr. Cadle went on to say that the three points on which he sought information were: Whether compensation for artificial manures, which were of recent introduction, could be claimed as a custom, in the absence of agreement? whether, in a Michaelmas taking, in the Vale, the incoming tenant must take all the hay and straw, if the outgoing tenant did not consume them? and whether the outgoing tenant must pick and remove the apples and pears, or must leave them for the incomer.

Mr. LONG and Mr. HAINE, as valuers (Mr. Long for thirty years), said it was the custom of the county that compensation should be given for all artificial manures bought and used for the last root-crop, or for any green crop, for the benefit of any

subsequent crops. Mr. Haine remarked that there were exceptions, as, for instance, when a man applied a lot of bones on strong clay, and from which the incoming tenant could not reap much benefit.

The CHAIRMAN: Suppose I am an outgoing tenant, and on my ten acres of swedes I have put three cwt. of guano to the acre, how much of the guano would you pay me for?

Mr. LONG: The whole of it.

Mr. G. WHITCOMBE, being appealed to, said he presumed that any dispute about an agricultural custom would be settled by a jury of influential farmers. There was no law as to this matter.

Mr. FRIDAY said compensation was always allowed; and Mr. T. CADLE agreed that that was so in nineteen cases out of twenty. No alteration was made on this point in Mr. Cadle's remarks.

In regard to the second point, Mr. WHITCOMBE said the incomer must take to the hay and straw; and Mr. HAINE remarked that in most cases in which he had valued, everything was taken to by the incoming tenant.

Mr. CLEMENT CADLE put this case: Suppose stock was very dear in the autumn, the outgoing tenant might say, "Shall I consume it or not? Well, as stock is dear, I think I'll leave it to him." At Lady-day the valuers come, and value it at the price of that season of the year. Therefore it becomes a matter of importance.

Mr. T. CADLE: If it is a Michaelmas taking, the landlord is obliged to take it all: if a Lady-day taking, the tenant consumes it all. In our part of the country the landlord doesn't take to anything at Lady-day: the tenant has till the 12th of May to consume it.

Mr. HAINE incidentally mentioned a case in which he had to value, and in which two tenants on the farm at the same time had agreed to divide the house and premises; and Mr. T. CADLE told of an instance in his neighbourhood (Westbury), in which a tenant giving up his farm at Lady-day, 1866, remained on it till May, 1867.

It was agreed that in the Vale, in a Lady-day taking, the tenant would not be compelled to take to the hay and straw.

As to the next point—"At a Michaelmas taking, whom does the fruit belong to?"—Mr. C. CADLE said he had had much discussion.

Several members now said "It belongs to the outgoing tenant;" and general conversation ensued.

Mr. C. CADLE said undoubtedly the fairest plan was to appoint a valuer; but often an awkward incomer thus took advantage of a yielding outgoer.

It was agreed that the outgoer must remove the fruit before Michaelmas, or the incomer claims it.

Mr. MORRIS said that had been the custom; but the matter was generally arranged by agreement.

Mr. WHITCOMBE said the outgoer might take or leave the fruit, as he thought proper; but Mr. T. Cadle answered: What we have agreed to has been the custom in our neighbourhood; and there is no larger fruit-growing locality in the kingdom.

With reference to another point, it was agreed that custom obliges the landlord to provide the rough material for gales, fences, and stiles.

The CHAIRMAN thought the proper thing was, that the fences should be put right, and then that the tenant should keep them in order.

Mr. MORRIS: That's a matter of agreement.

Mr. C. CADLE referred to the importance of agreements as a point more than any other requiring discussion, saying that in eight out of ten cases the landlords said, "We don't want anything but what's fair;" and the question was left in the farmers' own hands.

The Hon. Secretary, Mr. A. C. WHEELER, announced the receipt of a letter from Sir George Jenkinson, in which the hon. baronet, after expressing his regret at being prevented by the bad weather from attending, said: "I should like to have been at your discussion this morning, as it is a most interesting subject, and one on which much can be said. I like the clauses—at least most of them—in Messrs. Cadle and Bubb's agreement, which you sent me, very much. Their remarks are most sensible and practical. I think the old yearly agreements, where they have existed a long time, should not be meddled with. I have tenants at Hawkesbury who have, from father to son and nephew, &c., occupied the same farm for more than three hundred years, with only the old yearly agreements; and where such ties exist—as sacred, in my opinion, as a freehold—no new terms should disturb them."

A LANDLORD ON AGRICULTURAL POLITICS.

At the dinner of the North Riding Chamber of Agriculture, the Chairman, Lord FEVERSHAM, said: The question of the malt-tax had been talked about. When free trade in corn was carried in this country by the late Sir R. Peel, that statesman, we knew perfectly well, expressed himself that he considered the malt-tax inadmissible, after the opening of our ports to the foreign corn competition. The late Sir J. Graham expressed a similar opinion, and also, he might say, the late Mr. Cobden. One and all expressed it as their firm conviction that, after having exposed British farmers to the competition of the whole world in his own market, to keep the tax upon an article of British produce was unjust in principle. He did not stop now to ask the question whether it was time, or was not, for moving in the measure. He was talking of the principle; and he said that only one effort, during the twenty-two years that had elapsed since free trade was carried, had been made to make them free of the malt-tax. That effort was by the present Chancellor of the Exchequer. The Right Hon. Benjamin Disraeli in 1852 proposed to reduce the malt-tax by one-half; and how was it received by Parliament? That proposal was rejected by a large majority—he believed nearly ninety—and certainly it was not encouraging to Ministers to deal with the question. This proved to him that some mode of bringing to bear the opinions and sentiments of agriculturists in this country was necessary, in order that something like justice should be done. He rejoiced that upon this question of the malt-tax a committee of inquiry had been appointed in the last session of Parliament; and he believed their worthy friend Mr. Cayley took some part in bringing forward evidence on the subject. There was another question which, he believed, needed some consideration on the part of

agriculturists, and that was the cattle-plague. It was more than a hundred years since that disease visited these shores, prior to the recent attack. At that time it was stamped out after the lapse of a short time; but it broke out again, and continued to devastate the herds of the country for several years. We were now fortunate in having overcome the recent calamity. It had been stamped out; and he thought it was a very important subject for chambers of agriculture to discuss, as to which was the best mode by which we could regulate the importation of foreign cattle; for we knew that the disease had been imported into this country by foreign cattle. It must be a matter of satisfaction to all of them to know that her Majesty's present Government had given notice of a measure to provide for the slaughter of foreign fat cattle at the port of debarkation, and to place in quarantine store cattle. He hoped these measures would receive due attention, and would be supported by the people, and that they would become law; for he was sure most stringent regulations were necessary in order to regulate the importation of cattle. One immediate cause of the formation of the chamber of agriculture was the Highway Act. He had felt it his duty to take the course he did with reference to that Act; and it was matter of regret to him, and probably to most of them, that that act had been adopted in the North Riding by the quarter sessions; but as it was, he was bound to say, in justice to the majority of the gentlemen who supported that act, that he believed they did so from a conscientious conviction that what they were doing was for the benefit of the North Riding. He could not but believe they knew the strong feeling that existed on the part of the ratepayers against the measure, and he did not think any gentlemen would have taken the course

they did unless they felt what they were doing was for the benefit of the inhabitants. The law having been adopted, however, it was matter for congratulation that the ratepayers each and all had come forward, each in his respective parish, to elect the waywardens and do their best to carry out the law. They had shown that respect for law and for authority which, he trusted, would ever be the character of that district, and he thought it was highly creditable to them when they remembered how they were opposed to it. Any feelings of irritation which might have been raised on the question he trusted would be allayed, and that hereafter they would work together to show how efficiently and economically the act could be carried out. He rejoiced, as president of the association, in looking down the list of members of the chamber, to find the names of many landlords upon it as well as tenant-farmers. He had always been taught, and he still believed, that the interests of landlord and tenant were more or less identical. Nothing, he trusted, would occur to prevent them from meeting together in the discussion of those amendments and improvements of law which were for the benefit of the agricultural interest. Depend upon it, it would be an evil day for this country were anything to occur which should separate or divide the agricultural interest. He knew there were some questions upon which difference of opinion would exist. They could not always expect to agree; but, if there were such questions he trusted they would be treated in a spirit of conciliation, and settled, if possible, in a spirit of compromise. There were several subjects which chambers of agriculture might make their province. Do not let them always take subjects of a political bearing. If they did that they would descend into a political debating society, and nothing could be more unfortunate. There were two branches of subjects upon which chambers of agriculture could occupy their time very properly—the purely agricultural and partially political. The agricultural subjects of course related to everything connected with the cultivation of the soil, the rearing and feeding of stock, and all questions relating to the husbandry of this country. There some questions of this kind had been discussed by farmer's clubs, which were very important to the agricultural community. Some questions, also partly political, were of great importance. For instance the question of taxes, to which he had referred, which subject not only involved general taxation, but local taxation. Some thought that property bore more than its fair share of local taxation, and thought that personal property should bear its share for local taxation. There had been a bill before Parliament with regard to the valuation of property. Then there was the great question of education, not only as regarded the labouring classes, but as regarded the middle

classes. It was, he thought, a very important question for the agricultural body to consider the education of their sons, because in these days we knew that agriculture was not the thing it was at one time. It partook more of a scientific turn. Then there was the question of the employment of women and children, and the extension of the provisions of the Factory Act to agricultural districts. The question of statute hiring also would come up, a matter which, he thought, it would be for the advantage of the agricultural interest to have an improvement made in respect to it, and would be of great advantage to the morality of the humbler classes. He had sketched some of those questions which, he thought, might very fairly be discussed, and he advised them to take them up along with any others that might suggest themselves, in a calm and temperate manner, and let them endeavour one and all to unite together to promote, as one great and important object, the prosperity, happiness, and welfare of the community at large. He had no doubt that in the discussion of these subjects in the time to which we had arrived they would find—he hoped it would not be amongst the body which he had the honour to address—that there were such persons in this country who would, perhaps, hold out the right hand of fellowship to the farmers of England, and endeavour, if possible, to tempt them away from the allegiance to those constitutional principles to which they had been so long attached. He knew there were such persons who would like if possible to throw the apple of discord amongst them. But he did not believe the agricultural community, or any of the farmers of this country, would be caught by such a bait as that. He believed they would stand by the landlords, and that the landlords would stand by them. Sure he was, that if, unfortunately, they dared to follow in the lead in the direction pointed out, they might, it was true, destroy the constitution of England, they might at all events change the laws relating to the tenure of land in England; they might bring about a great change in the fundamental laws of the country; but he believed the result would be, instead of having to look across the country and see the prosperity which existed in the homestead and amongst the agricultural community of the country, we should have to look out to find our parallel across the water, in France, where were a miserable pauper proprietary and an impoverished tenantry. He asked them to discuss these questions with sound constitutional opinion, and in doing so they should be prepared to triumph in endeavouring to bring about in all those amendments or improvements which they might consider, something for the general advantage and benefit of the community with which they were connected.

SEPARATE MARKET FOR THE SALE AND SLAUGHTER OF FOREIGN CATTLE.

At the meeting of the North-Riding Chamber of Agriculture, Mr. ELLERY, of Whitwell, moved, "That the Chamber fully adopts and endorses the resolution passed by the Central Chamber of Agriculture—"That this Chamber regards with satisfaction the Bill introduced by Government for establishing a separate market for the sale and slaughter of foreign cattle; but it is considered essential that the Bill should include all foreign sheep and pigs, and that the same regulations should apply to all other ports of landing."

Mr. J. MARCALFE seconded the proposition. They should not allow themselves to be invaded by foreign cattle, because disease was introduced, and an enhancement in the price of beef and mutton was caused, at the expense of the farmer. The statistics brought forward last week at York were really alarming, and he considered it quite proper that the subject should be considered, and that the motion should be passed (applause).

The motion was agreed to.

Mr. KILBY, of York, referring to taxation on account of cattle plague, said the compensation should be met out of the Consolidated Fund. It was very unfair that some counties should be so heavily charged, whilst others were not taxed to such an extent. He moved "That in the event of any infection being spread in the home stock by the importation of diseased foreign stock, full compensation shall be allowed, and

that the same shall be allowed out of the Consolidated Fund, and not out of any county or local rate."

Mr. VERITT, of Southwoods, Thirsk, seconded the resolution.

Mr. MILBANK, M.P., said he himself had gone to Sir George Grey, and asked him about that very question, having had several letters from farmers in the North-Riding of Yorkshire on the subject. Sir George Grey told him it was an impossibility. He also went to Lord Robert Montagu, who was a very great friend of his, and he had asked him upon the question, more as a friend than as anything else. He told him that the Government had made up their mind to the point that it was perfectly impossible that they could pay out of the Consolidated Fund. Those who expected such a result would be very much disappointed.

Mr. LATT said the agriculturists had been charged with the stigma of being stupid people, and not being able to see further than their noses; but, now that they were amalgamating together into Chambers of Agriculture, it might be hoped that this feeling would be removed.

Mr. J. H. LEGARD, of Appleton, said this question might be deferred, as it would go forth to the world—were the proposition adopted—that farmers in such an infantile association were somewhat selfish. They all remembered the outcry when it was proposed in Parliament to give compensation. He pro-

posed that the question be referred to the Council, and that it afterwards be discussed at a general meeting.

Mr. HARTAS, of Sinnington Grange, concurred in this view.

Mr. J. SMITH, of Risborough, moved an amendment, "That, as they were now mercifully exempt from disease to any extent, and as Government was giving its attention to prevent the introduction of disease from foreign ports, the Chamber pledges itself to strengthen the hands of the Government in the action they are taking."

Mr. E. SMITH, of Amotherby, seconded the amendment, which was ultimately carried.

COUNTY EXPENDITURE.

The CHAIRMAN submitted a communication from Sir W. P. Galway, in which he expressed regret at his absence from the meeting, more especially as he might have ascertained whether the principle of a Bill to be introduced this session into Parliament, for the purposes of local representation in all matters of local taxation, would be likely to obtain the influential support of the association.

Mr. J. METCALFE moved "That the Chamber, deeming it contrary to the spirit of the Constitution that taxation should exist without representation, considers that the present mode of conducting the expenditure of the county and police-rates is opposed to that just and equitable rule which prevails in all

other cases where public money is provided, either by taxation or by rate."

Mr. HOPPER, of Suffield, seconded the motion.

Mr. CAYLEY said this proposal might represent the wishes of the Chamber, but it might not agree with the experience of other parts of the country. The introduction of the Highway Act in the North-Riding might have promoted a desire to control the expenditure.

Mr. E. SMITH did not agree with the last speaker that the Highway Act influenced the Chamber in bringing forward such a motion. It originated more in the fact of their being an organised body, where opinions could be ventilated and given effect to.

Mr. Metcalfe's motion was carried, and the following resolutions on the same subject were afterwards referred to the Council, on the understanding that they should be considered shortly before the local chambers: "That, with the view of correcting an anomaly, this Chamber considers that county financial boards ought to be established, which should possess a controlling power over the expenditure of all moneys raised for county purposes, and that such financial boards should be composed of elected members only."

"That this Chamber is of opinion that such boards might be composed of two or three members from each branch poor-law union, and pledges itself to give its support to any measure which may be introduced into Parliament embodying these principles."

THE LONDON BUTTER TRADE.

The following communications were read at a late meeting of the Agricultural Association at Fermanagh.

West Town, Hurstpierpoint, Sussex, November.

Dear Sir,—Agreeably to your request, I beg to give you my system of butter-making and dairy management, which if you think at all worthy of notice or useful to your countrymen, pray make what use of it you please. Nothing would give me greater pleasure than to see Irish dairy farmers take their proper stand in this market, as there is hardly any limit to the demand for fine butter. As regards the superiority of Normandy butter over Irish, it must be from different management, as the capabilities of Ireland for butter-making is superior to France, England, or indeed the wide world. Ireland has been, for years, trying a mixed husbandry—working hard, exhausting her lands, and year by year falling behind the great grain regions of Europe and America, neglecting a mine of wealth at her feet—grass.

Every crop, except grass, has a thousand enemies to contend with—insects innumerable, frost, rains, droughts, and blights—while grass being a natural product of the soil, scarcely ever fails. It seems to me only common sense to adopt the kind of farming which nature and climate plainly indicate, and which your country is, above all others, specially adapted to. Though cotton is said to be king, it is a mistake—grass is emperor, and cannot be dethroned; so sow all the good kinds of grass you can procure, and wait the result. Mother Earth will select from the seeds thus cast on her bosom the kinds she will grow, and indicate, unmistakably, by their growth and vigour, those best suited to the soil. Irish farmers may rely on it, that dairy farming is destined, at no distant period, to become one of the most profitable branches of their farming, but, in its prosecution, the highest ability will be demanded. For this reason, it becomes them to be men of intelligence, having a clear knowledge of the processes of nature. Irishmen have received heavy blows from foreigners, but in truth, I must say, not undeserved; but I now see them emerging into light, and by their well-directed efforts must place this branch of farming on an eminence, from which other countries may draw lessons, and Ireland wealth. Irishmen must not for ever be looking to the past, but face the future like men, and by persistent efforts expend the means and employ their talents, taking advantage of their glorious country and her resources, with good English markets, increase her wealth, instead of sitting down and crying "Justice to Ireland." I am but a tenant farmer, have no lease, caring little of knowing what my forefathers suffered 300 years ago.

The idea of making good butter among the stench of a

farm-yard rising from decomposed vegetable matter, odour from pig-sties, horses, cattle, and turf-smoke, may be entertained by some, but it is one of those rare pieces of skill which we have yet to accomplish; but you may take it for granted it never has been done, nor never will, for good butter to be made in any dairy surrounded by filth, and where no attention is paid to cleanliness. Next to having good cows (mine are all Alderneys) and good keep, is the importance of having your milking well and properly done. Cows should be put in a secure place to milk—in a barn expressly prepared for them, with good ventilation for warm weather, and away from offensive smells, such as manure, and pig-sties, &c. My barn drains into a tank underneath. There should be as much uniformity as possible in the hours of milking—dividing the two points of time, between morning and evening, and evening and morning, as nearly equal as possible. It is important that cows should be treated kindly, not only when milking, but at all other times; if you wish to get the best flow of milk, great pains should be taken to clean the udder before milking. The milkers should always wash their hands between the milking of each cow, which will prevent the cows from having sore teats: for this purpose it is advisable that a pail of cold water should always be at hand. It is much the practice, especially with young milkers, after drawing part of the milk, to stop to hear or tell a story before finishing. This is a bad practice. To get the best results, the milk should be rapidly drawn as quick as possible, until the udder is thoroughly clean. A delicate hand will get more milk than one who is always out of sorts, and whom nothing pleases, and give more to a gentle maid than a crusty old bachelor. Milk the cows in rotation, beginning and ending with the same cow. I use tin pans, allowing the milk to stand not longer than thirty-six hours, before skimming off the cream. Care must be taken to wash the pans perfectly clean, then scald and place in the open air to sweeten until wanted. My dairy is fitted with hot-water pipes, which are in use from October to April, or thereabouts. The uniform heat night and day is 60 to 64 degrees temperature. I wash the dairy throughout once a day, sweeping off the water that it may dry as soon possible. The benches in the dairy for the pans to stand upon are iron rods placed two feet above the hot water-pipes. The milk should be strained from the pail into the pans through a fine wire-sieve; but before so doing, a small quantity of saltpetre (say half a teaspoonful, not more) should be put into every pan—each pan holds three gallons of milk.

I have Tinkler's churn. It can be had of all sizes. In churning—say from 100lbs. to 140lbs.—two men are required, and the butter should always come within three-quarters

ters of an hour, and, when come, the plug at the bottom of the churn must be taken out, to allow the butter-milk to run off; then replace the plug, take off the bung, and pour in about the same quantity of clean cold water as there was of butter-milk; replace the bung and churn about two minutes and the butter will be thoroughly washed; draw the plug and let the butter drain. When the butter is taken out, about 8lbs. or 10lbs. at a time should be put on the butter-board, and salt very slightly (if for immediate use), then thoroughly dry with cloths before packing. Wooden knives are preferable to the hands in making up butter. My butter keeps perfectly sweet ten days. I churn twice in the week, making 400 to 500 lbs., and have made a contract with a London house at 1s. 8d. per lb. for eight months, and 1s. 6d. per lb. for four months, delivered at Hassock-gate Station.

The best dairy women will not make good butter, unless the greatest care and judgment are displayed in preparing and feeding the cows. In the spring and summer months I tether my Alderneys, placing pans of water, where their noses meet, at the half-circle, as in Jersey and Normandy. In the winter I stall them (with pans of water between each cow) giving them a turn on the grass on fine days. In the winter season never feed with one sort of roots only at a meal, but let the cows have a variety—say a few cabbages, a few swedes, mangold wurzel, and red carrots, with bran, oilcake, and the best meadow hay. The cabbages and roots must be carefully prepared, all dead leaves or rotten parts must be trimmed—the crowns of the swedes and mangold must be cut off. I always feed with the roots whole, as the cows are not so liable to choke as they would be with roots cut to pieces. If the root crop should fail, feed with grains, bran, bean-meal, and oilcake, which is more expensive, but decidedly the best food that can be given, causing the cows to yield the richest milk, and consequently the finest butter. My butter is nearly the same quality all the year round. When the cows are in the stalls they require to be kept warm (as they will produce more milk than when left cold), airy, and very clean. The less quantity of straw they have to lie on the cleaner their udders will be kept. With regard to the quantity of butter than an Alderney cow will produce, I find that with fifty or sixty cows in full milk in the summer time, they would average about 5lbs. to 10lbs. per cow per week; and yet were I to select two or three of average quality, pasture them by themselves, and keep their milk in separate pans, the produce would be 12lbs. or 13lbs. per week each cow. I account for this, by cows always doing better in two's and three's than in large herds, and also that the mixture of the different cows' milk will not produce so much cream or butter as if kept and churned separately.

Yours very truly,

HENRY BULL.

Thomas R. Downes, Esq.

[This system appears to be a close copy in many respects—such as tethering, the breed of cattle used, keeping the dairy sweet, and so forth—of that carried out on a much larger scale by Mr. Dumbrell, also near Hurstpierpoint, and of which an account was given some years since at the Farmers' Club.—EDITOR, M.L.E.]

London, 254, Tooley-street, November.

My Lord,—It is truly gratifying to see so distinguished an Irishman as your lordship taking an interest in such an important article of our trade as butter.

Ireland in the memory of men living (nearly) supplied London, and what are called the Home Counties, with salt butter, which she has lost. In compliance with your lordship's request, I wait on you with the cause, and at the same time answers to your other queries.

At the dinner of the Limerick Farmers' Club a paper was read on this subject by William Pryce Maunsell, Esq., in which he says, amongst other things, "I need only mention the condition of Ireland, as regards soil and climate, compared with any other country, which renders it by nature the first, and in fact the only real natural producing butter country. What is the meaning of the term Emerald Isle? Why the island of grass; and grass means butter. Butter in almost every other country is an artificial product. I have travelled over the greater part of the world, and grass as grass only exists in Ireland." No doubt, in the main, all correct, but how little to the credit of Irish dairy farmers, under such favourable circumstances, that they should allow French and Germans to

beat them out of the best market in the world, and getting the highest price for fine butter, and Ireland the lowest! To show that butter can be produced in countries not possessing any of the advantages of Ireland, I take an extract from a paper read at the Society of Arts by J. Chalmers Morton, Esq., on Dec. 13, 1865, "On London Milk." He says: "Starting with a very strong impression, London milk is almost invariably diluted and adulterated. I am bound to say—though my prejudices were those of a countryman, viz., that cows are healthier and better, and yield the best and most wholesome milk in fields—that London cow-houses are a nuisance to be abated. From my whole inquiry I am bound to say I now believe that the milk produced in London cow-houses is better than what is delivered at the railway stations from the country, and that London is better fed with milk than the average of country villages. These conclusions will startle, and perhaps disgust some, who may have come here expecting a wholesale condemnation of London milk. They are the conclusions simply of an agriculturist, anxious that the best food should be produced and offered to the consumer. I have no doubt a London cow, fed and cared for as in London, abundance of food, good water, brewers' grains, warm cow-houses—the high premium on keeping cows in good condition and the best market in the world—all these secure the best feeding being adopted. I have no doubt, therefore, that the milk yielded by a London cow is better than that which the same cow would produce under ordinary Gloucestershire or Cheshire management. I admit that generally it is watered by the retailer; as to the other popular prejudices—the idea for instance, that chalk is added; the outrageous idea that 'brains' and other filthy animal jellies are added—may be dismissed as utter fictions." In the discussion following, Dr. Whitmore said: "London milk, as a rule, contained a larger proportion of cream, more casein or cheesy matter, and more sugar than country milks." Dr. Voelcker said: "There was one remark which fell from Mr. Morton which he could thoroughly endorse, viz., that London milk when unadulterated was better than country milk, and especially richer in butter. He ascribed this to the fact that London cowkeepers fed their animals with better food, especially rich in fatty matters."

I give you these extracts to show under what unfavourable circumstances good butter can be made, and that Irish dairy farmers must not depend on their Emerald Isle alone to produce fine butter. Why has Ireland lost the London market, and that under all the favourable circumstances named by Mr. Maunsell, and stands lowest in our price currents? There is no prejudice against Irish butter, as Irish, or against butter of any country, and though the contrary idea is very popular in Ireland, as also that Englishmen do not know what good butter is, and Mr. Maunsell's illustration of the Irish lady, married in England, who states, her friends there never tasted good butter till she gave them some from Limerick, is absurd, and only misleads, as the finest butter in the world is made in England. He is also misinformed in saying French butter is very inferior; on the contrary, there is nothing much better than Normandy, which your Countess admitted on her visit to this market—giving it the second place.

Returning to the query: Why has Ireland lost the London, Australian, South American, and West India markets? truth compels me to say, from fraud, over-salting, over-holding, and badly made unsightly packages. True, as the Lord Mayor of Dublin stated in the paper he read on this subject, apologising for the packages "Surely John Bull does not eat the packages!" still, if he likes neatness and cleanliness, and if French, Dutch, and Americans find it their interest to humour this prejudice, Irishmen should do the same.

The great complaint against Irish butter is the enormous quantity of salt in it, and not for the purpose of curing it, but a cruel fraud on the consumer. A known quantity of salt is sufficient to cure it, and every grain over that is injurious to the butter.

The quality of the salt used is of great importance; it should be made by slow evaporation and perfectly crystallised, dry, and pounded fine.

The Dutch use... 3lbs. to 5lbs. to 56lbs. of butter.

The Normandy ... 3lbs. to 5lbs. to 100lbs. "

Dorsets 3lbs. to 4lbs. to 60lbs. "

Americans one pound and two ounces of salt to twenty-two pounds of butter, a small teaspoonful of pulverised saltpetre, and a large table-spoonful of lump sugar (pounded).

When packed in firkins, none but those made of white oak should be used. The firkins to be neatly made airtight; before used to be soaked in cold water, after that in hot water, and then again in cold water. After being filled with butter, should be headed up tight (and not, as in Ireland, sent to market without the head, or loosely put on), and strong brine poured in at the top, so as to fill up all intervening spaces; a piece of calico should be put between the butter and the head, and, if from a first-rate maker, he should have his name and address printed on the calico, or have it branded on the side of the firkin; all the best Dorset, American, and Kiel dairy farmers do this, the export merchant putting his name on the head. This is important to good makers, as it is an indictable offence to pirate marks or brands.

The tares of the casks are also an unceasing source of annoyance between buyers and sellers. Casks that are described 14lbs. are found on weighing to be often 17lbs. I have seen pickled second Corks 20lbs. short of the weight invoiced. This, coupled with the fact that the cask are so badly made they will not keep the dirt or air out, the butter gets sidley, requiring to be scraped at a loss to the retailer; and as many of the country retailers are also drapers, neatness of packages is a great consideration with them—which foreigners well understand—Americans sometimes sending their butter in casks sewed up in canvass to keep them clean.

A great portion of Irish butter is saturated with peat smoke, and flavour of pig-sty, or stables, or worse.

In reference to Irish dairy farmers sending their butter mildly salted to this market, though I am strongly of opinion it would pay them best to be so, still I see many objections and difficulties not to be easily overcome, and would often lead to loss, particularly to the small farmers. So many interests are involved in the present system: farmers as well as merchants being speculators—the merchants seeing if all butter was cured mild, the dairy farmer must from necessity send his butter direct to the London agent. I am sure the large dairy farmer would find the mild cure was the proper system for him; and to enable him to form an idea of the fluctuations of the London market I give the monthly quotations for first-class butter sold in this market wholesale to the trade. Of course the retailer charges a profit to the consumers on these prices.

MONTHS.	Fresh. 1866.	LIGHTLY SALTED—1867.									
		English. pr 112lb.	Dorset.		Normandy.		Friesland.	Choumela.	Irish Extra Mild.		
			s. d.	per 112lb.	s. d.	per 112lb.				s. d.	per 112lb.
January	186 8	145 0	140 0	140 0	137 0	121 0	121 0	121 0	121 0	121 0	
February	186 8	145 0	140 0	140 0	136 0	122 0	122 0	122 0	122 0	122 0	
March	186 0	140 0	136 0	136 0	134 0	119 0	119 0	119 0	119 0	119 0	
April	149 4	180 0	123 0	123 0	114 0	none	none	none	none	none	
May	140 0	116 0	107 0	107 0	99 0	110 0	110 0	110 0	110 0	110 0	
June	180 8	116 0	108 0	108 0	92 0	108 0	108 0	108 0	108 0	108 0	
July	130 8	113 0	108 0	108 0	101 0	108 0	108 0	108 0	108 0	108 0	
August	140 0	116 0	112 0	112 0	105 0	101 0	101 0	101 0	101 0	101 0	
September	140 0	126 0	124 6	124 6	116 0	108 0	108 0	108 0	108 0	108 0	
October	149 8	126 0	120 0	120 0	110 0	113 0	113 0	113 0	113 0	113 0	
November	158 8	126 0	120 0	120 0	105 0	108 0	108 0	108 0	108 0	108 0	
December	177 4										

Inferior butter fluctuates much more.

Friesland, though generally very good, sometimes comes unaccountably fishy, and must be sold at any price.

In Normandy merchants or their buyers (like Irish pig-jobbers) attend the rural markets daily, where the farmers come and all bring their butter in lumps. This is taken home to buyers, assorted according to quality, packed in crocks or kegs, with a little salt; though the colour is very good, our correspondent assures us no colouring matter is used, except with the butter from poor lands, which is shipped as a low quality. All is forwarded twice a-week. The popular idea that any butter coming to this market is adulterated with suet, lard, or any other grease, is as untrue as that milk is adulterated with animals' brains and chalk. There is a butter imported from Holland and Antwerp called *bosch*, which is adulterated, but only with water and salt, and is sold as such, and at a corresponding price; when old butter is cheap it is mixed with it and milk.

Our consumption of butter is enormous, principally from France, say in 1866, 353,116 cwt., Holland 345,026, other countries 338,552, Ireland, 1866, 41,786; besides English fresh, Dorset and Devon salts.

In 1834, imports from France were 2 cwt., now 353,116 cwt.—and this at the expense of Ireland.

If Irish farmers will speculate and keep their butter for a market, nothing equal to a crock: it requires no calico, and the butter will not get sidley; and if put in a cool place will keep the whole season if properly made, packed and salted. Messrs. William Powell and Sons, of Bristol, have designed a crock to contain about 66lbs. of butter, with a lid and simple contrivance to fasten it. If the lid is covered with plaster of Paris, or cement, it is hermetically sealed, and the butter will keep for months without injury. This crock meets all the requirements of the Irish farmer. All the best Normandy comes in crocks.

On looking over the various instructions given for making butter, as essentially necessary to produce a good article, I find the first and foremost always is cleanliness, good pure milk, a dairy so constructed as to preserve an even temperature, with just enough of ventilation to secure a pure atmosphere, and a cold spring of water can be had, it adds greatly to the value of the dairy, for dry air is injurious to cream. The dairy should be a perfect model of neatness and cleanliness; stone floor, with all the joints cemented, so that no slops or decomposed milk can have entrance, and be situated in a cool airy place, every part well ventilated and out of the reach of all disagreeable smells or fetid odours, as nothing is so susceptible to external influences and conditions of changes as cream or butter, and hence the necessity of great cleanliness, for not only does the atmosphere surrounding the milk after it is drawn from the cow have an influence upon it, but the food and the drink of the animal, and even the very air she breathes during the time the milk is being elaborated and secreted, has its influence for good or evil on the flavour of the butter; it will take up the odour of a foul stable, pig-sty, or turf smoke, hence, let absolute immaculate cleanliness be the watchword and rallying cry, until Irish butter stands foremost in the price currents of England and her colonies.

I assure you we are all anxious to see Irish butter take its proper position in our markets.

Your Lordship's obedient servant,

THOMAS R. DOWNES, Provision Broker.

To the Right Honourable the Earl of Erne,
Crom Castle, Co. Fermanagh.

P.S.—The (late) Lord Mayor of Dublin was "misinformed" in stating all the foreign imported is fresh, and that steam communication now placed Ireland is an unfavourable position. The reverse is the fact, as with the exception of a little from Ostend, all foreign is salt. Butter can be delivered from Dublin in sixteen hours, Waterford twenty-four hours, Cork thirty-six hours; while it takes from the nearest foreign market, Holland, forty-six hours, Normandy sixty hours, Kiel seventy-two hours, America fourteen days. It is very humiliating to the Irish agents, to see foreigners beat them in their own markets. A contract was made this week for fresh butter at 1s. 8d. per lb. for eight months, and 1s. 6d. per lb. for four months. In my time, Irish bacon was the worst in this market, and sold at 3d. to 4d. per lb.: now it is the best, and sells at 7d. to 8d. per lb. All honour to the English curers who settled in Ireland, and to the Denny and Richardson, who so spiritedly followed with further improvements, beating the celebrated Wiltshire out of this market—no reason why the Irish dairy farmers should not "go and do likewise" in butter.

London, 365, Tooley-street, Dec. 6th.

Dear Sir,—Agreeable to your request, I wait on you with the mode of making butter in Holstein, in hopes it may be useful to your countrymen. Though exclusively engaged in the foreign provision trade, it would afford me great pleasure to see Ireland successfully competing with the foreign markets; but your countrymen may take my word they cannot do so, even with all their great advantages of climate and facilities to get their butter to this market, without great care and attention. With her unrivalled resources, however, it can only be the fault of her own sons if she does not in time assume the first rank in the competition:—

In the large dairy farms in Holstein—having in many cases 100 to 200 cows, sometimes more—the greatest attention is bestowed upon everything bearing upon the production of butter; for instance, feed and care of the cows, the manufacture of the butter, and the arrangement of the dairy buildings. The result is a very high average price obtained for their produce, which commands the preference, especially in the northern markets of England.

The make is divided into winter, or fodder make, new milk; grass, or summer make: stable, or autumn make.

Fodder begins when the cows come in from the fields at the end of October, and is neither large in quantity nor superior in quality, as the cows yield but little, and purely old milk. This sort is not fitted for keeping, and usually sent to market promptly.

New milk, of course, begins according to the time of calving, usually some time at the end of February, and early in March. The quality of this make is very fine, sweet, and fresh, and in March, April, and May, usually meets a bare market, and realizes high prices. Being fodder-made, however, it is not calculated for keeping beyond a few weeks.

Grass butter begins when the cows are turned into the fields, about the middle to the end of May (spring being late in that climate), and lasts till the month of August. This is a fine, rich, well-keeping butter, though it sometimes suffers in the extreme heat of summer. This make is usually shipped in the late autumn, unless the markets are sooner favourable.

Stubble butter is so called, from the cows being put after harvest on the after-meadows, corn stubbles, &c., where they are kept till housed for the winter about November 1st. This sort is usually of very superior quality—mild, rich, but yet capable of being kept for some months without much injury. Shipment is made about the last months of the year.

The great characteristics of Kiel or Holstein butter, as compared with Irish, are—clear, solid, waxy texture, freedom from butter-milk, richness of quality, delicacy of flavour, and mildness of cure. It is rarely coarse in salt or texture; the defects to which it is most liable being bad flavour, as some farmers will occasionally overhold until it becomes rank and strong, or tallowy.

As to the feed: In summer and autumn, while the cows are out in the meadows and stubbles, they are sometimes tethered, by no means as a rule, and they remain out night and day. When once taken in-doors, they remain under cover entirely, in a warm, well-ventilated space, and are fed something after the following order: About five a.m. they have about as much meadow or clover hay shaken down before them by degrees as they will consume in about two hours; they are then supplied with water; chaff cut from oat or barley straw mixed with 4 to 5 lbs. (sometimes even more) of bruised oats or barley is now given to the cows (moistened in their troughs); at one o'clock the second feeding takes place similar to the first, and between the two some hay or straw to pick at as they choose, while chewing the cud; for the evening and night they must put up with plain straw. About 2 oz. of salt per cow is given daily to relish the food, and help digestion. Oats are considered to increase the quantity, barley the richness, of the milk: equal parts from each form the mixture. Oil-cake yields more milk, but affects the flavour of the butter unfavourably, as also do turnips, mangolds, swedes, potatoes, and all roots but red carrots, and therefore the latter only are given to cows when in-milk. It is very important that the cows should leave the stall—when spring comes—in good condition, and thus continue a full yield of milk when they first get out to grass.

MANUFACTURE OF BUTTER.—The milk, as it is brought into the dairy, is strained into the pans through a fine hair sieve, taking care that any splash of spilt milk is at once

wiped up, lest it should taint the air in evaporation, and sour the settings. To secure a pure flavoured and well-keeping butter, the utmost cleanliness in all utensils, and a pure air in the dairy, are of course essential, but after that much will depend upon skimming the cream just at the proper moment. This must always take place before the milk can become sour, and in order to get the largest amount of cream, an even temperature in the dairy is of the greatest help. Pure air does not mean a strong draught, as the surface of the milk must not be ruffled. What the proper moment for skimming is depends on the temperature and atmospheric conditions generally. In Holstein the rule is—in the heat of summer (temperature 55 to 60 deg. Fahrenheit in the milk-room) skim after the milk has stood for from 82 to 84 hours: in spring and autumn (at 48 to 50 deg.) about 46 hours; and in winter (43 to 46 deg.) about 60 hours. This should get the whole of the cream; but if at any time earlier the milk begins to sour, it is skimmed at once. The cream, as it is removed, is strained into the cream tubs, and kept occasionally stirred. It remains there until it has sufficiently thickened, and has acquired a pleasant acid taste.

It is as well to repeat that choice keepable butter can only result when the milk has kept perfectly sweet; as the souring develops curd. The cream, on the contrary, should have an acid taste before churning, which must not, however, be confounded with the sourness just mentioned, which is altogether different, and arises from the whey, from thunder or close atmosphere, sometimes from standing too long, from damp or badly cleansed utensils, or from general want of care and cleanliness.

In summer the cream generally stands about twelve hours before churning; in winter, about twenty-four hours. The room may require cooling in summer and warming in winter; but with pure air free from bad smells, smoke, or such like, as the cream easily takes up the flavour. Potatoes, roots, herbs, or anything of the sort should never be stored in the same place. The temperature of the cream considered best for churning is about 57 to 60 deg., though that varies somewhat with circumstances. The churn is rinsed out, before putting in the cream, in summer, with fresh cold water; in winter, warm water is used, as a certain moderate range of temperature much facilitates the coming of the butter, and the addition of a painful of iced water in warm weather, and warm water in winter, into the churn, is sometimes made for this purpose during the churning. When the butter comes it is taken out, and the whey pressed out to some extent, put into trays and carried away to the butter cellar. Here it is placed in a long trough, slightly on the incline, with a few holes at the lower end to carry off the moisture. This trough is first rinsed with hot water, and then with cold to prevent adhesion, and the dairy-maid washes her hands in the same order. She now breaks off with her hands a lump of some 5 lbs. or 6 lbs. of butter, and presses it against the side of the trough with both hands opened; rolls it up and presses it out again till all the butter-milk is got rid off. It may require the operation forty or fifty times before this is thoroughly effected. Piece by piece the butter is treated in this manner until the whole churning has been manipulated and placed on one side; then wipe out the trough again with a cloth and hot water, rinsing off with cold, ready for salting and colouring.

We may remark, in passing, that colour is added in the winter months, for which purpose annatto is used, prepared previously by melting down in a small quantity of butter.*

In salting, fine, dry, clean salt, free from mineral taints, only is used, which must have been stored away from all possible contamination by dirt or bad odours. At the rate of about 3½ lbs. per cwt. it is first strewn over the surface of lumps of butter about 30 lbs. to 40 lbs. each, and then distributed through the mass with the hand, fingers extended but kept close together. At this stage it is not kneaded in, but when fairly spread the butter is again worked up in 5 lb. or 6 lb. lumps, as at the earlier stage. It then left for twelve hours or longer, if there is not sufficient to fill a cask.

Then for the third and last working add 1 lb. more salt per cwt. Spread fairly through, and work up the butter till all the liquids not belonging to it are finally expelled. A cask should be filled at one packing to get a perfectly even colour

* A superior fluid-annatto, much used in this country, is prepared and sold by Nicholls, of Chippenham.

and quality, and should be firmly and closely packed, so that all sides are filled. The system of washing the butter itself in cold water is never followed in Holstein, as it is found to impair the delicacy of the flavour.

The casks are made of young red beech, felled in December, when the timber has least sap, and seasoned in the open air before it is stored to dry perfectly, previous to use. The copper is required to furnish packages water-tight, and that when closed will be nearly air-tight. Before use, fill the cask for twenty-four to forty-eight hours with strong brine, in which is a dash of saltpetre, then wash with hot water, rinse with cold, and rub dry with salt.

These precautions will largely prevent aisey, mouldy, or tallowy butter, even when kept some time, provided the casks have all along been kept dry and clean.

From the foregoing statement it is to gather that the prominent points in the Holstein treatment are extreme cleanliness and regulated temperatures. These can only be obtained by suitable arrangements of buildings and free space. Hence their dairies are models of order; and on a large estate the buildings devoted to butter (almost always detached) are the first consideration, to which the other farm-buildings take the second place.

The rooms for setting the milk, making and storing the butter, depend much for their success on position and suitability. The building usually runs from south to north, with trees planted conveniently as a shade from the hot sun.

The milk-room has brick or stone walls, often double, the free space between tending to keep it cool in summer and warm in winter. It is usually sunk from three to five feet below the outer surface, with a height of from sixteen to twenty-five feet, to give free vent to all exhalations from the milk. This is further provided for by roof-ventilation, through shafts, and by windows four feet wide, five feet high, five to six feet above the floor. Shutters and louvres are also customary. The floor is laid with tiles or flags, set in cement, sloping slightly to the gutter on each side; so that the water

used in flushing runs off, leaving it easy to dry and wipe up all moisture. Nothing tends so much to sour the milk in summer, and thereby lessen the quantity of sweet cream, as dampness. The pans should have room to stand free, and not be placed one upon the other. The size of the milk-room depends, of course, on the number of cows kept. In a dairy of 140 cows, the measurements were, for the milk-room, 50 feet long, 35 feet wide, 20 feet high from roof to floor, which was sunk five feet lower than the outer surface. The other rooms were in proportion, with ample space for air and ventilation. All store-rooms are separate; and the dairy building is always far removed from the cowhouses, pigsties, dung-heaps, or anything whatever that is offensive and can taint the air. With regard to the utensils mostly used, there is nothing of such marked difference as to call for special notice, except that the old-fashioned round pans, whether of wood or ware, are largely going out of use. The preference is now given to pans of cast-iron, enamelled white inside, about six feet long and two feet wide, for which it is claimed that the cream rises more quickly and in larger quantity.

This slight sketch of the system in force in most of the best Holstein butter dairies is not intended necessarily as giving a model plan which is practicable everywhere. The circumstances that the farms in Holstein, Schleswig, Seeland, and Mecklenburg are very extensive, that the number of cows kept in one hand is also large, that the buildings and arrangements involve considerable outlay of capital, form conditions not always present in Ireland.

By the close comparison of different methods, however, no doubt, valuable hints may be gained, tending to the general improvement in the manufacture of that important article, butter. As Irish farmers and merchants will hold their butter, I think the Kiel plan best suited to Ireland.

I remain, dear sir, yours very truly,

JOSEPH R. WELB.

To Mr. Thomas R. Downes,
Secretary of the Provision Trade.

LINSEED, LINSEED CAKE, AND OIL TRADES.

ANNUAL REPORT.

The opening month of a new year again affords us the pleasure of furnishing you with a retrospect of the past twelve months, which we hope do not diminish in interest by repetition. Notwithstanding the numerous complaints as to business generally, our trade has no reason to find fault with the result of the year's operations; and although at the moment prospects are not very encouraging, we yet expect the end of this season will show a satisfactory result; whilst as regards the future, the reports as to supply are very favourable, and the long-hoped-for lower range of prices will be current, we trust, during the season 1868-1869.

LINSEED has been unusually steady since our last annual was issued, and the course of prices has assimilated very closely to that of 1866. 87s., cost, freight, insurance, and sound bags, was the value of Calcutta on the first of last January, and stocks being very light it improved 1s. 6d. per quarter by the end of the month. An increased supply caused a decline of 2s. to 3s. per quarter during February, but the decline was recovered in March, and again lost in April, when 66s. was current value, from which it scarcely varied until the end of June. The great scarcity of spot seed caused a reaction to 68s. in July, and from then until now that has been the actual value; with an occasional fluctuation of 6d. to 1s., the tendency generally being upwards rather than otherwise. To-day the price is 68s., and stocks in warehouse *nil*, and at mills, with few exceptions, very short. Prices for seed on the way and for shipment were quoted from 3s. to 5s. lower than for ready seed, during the spring and summer months, but that excessive difference has lately disappeared, and they are now more nearly on a par, owing to the relatively larger quantities on the way. In Black Sea seed a considerable trade has been done at about relative fluctuations in price to Calcutta, but the difficulty of estimating quantities on the way continues to increase, by reason of the large supplies now sent forward by steamers, so that there is less opportunity than formerly for speculative opera-

tions, and they are consequently becoming more and more circumscribed. 66s. 6d. was January's value, followed by a decline of 5s. the next month, and a recovery of 4s. in March, at which time the cargoes were delayed by continued easterly winds; a decline to 61s. occurred on the arrival of the ships, and there was afterwards little variation until June, when 64s. was again paid, and from then until now 1s. to 2s. per quarter has been the extreme fluctuation, the tendency, as with Calcutta, being always to a recovery of any temporary depression. Very little of this quality offers on sale to-day, and 66s. is nominal value. The lowest quotation for seed for shipment was 59s. 6d. (in June), and the highest 67s. 6d., which price was marked in October, when, for the first time for many months, forward seed was not purchasable except at an advance of 1s. to 1s. 6d. per quarter upon the spot value. The demand for seed has remained throughout the year somewhat in excess of the supply; and so long as such a state of things continues, high rates must naturally be expected. Qualities of all sorts continue satisfactory, and the "Association" has reason to be well satisfied with the fruit of the labour bestowed on its formation, and the persevering efforts to bring about the result which was, and is, its primary object. For next season large supplies are everywhere reported, and from the Black Sea about 120,000 quarters have already been contracted for, for spring and summer shipment, at from 62s. to 60s. per quarter, according to periods of delivery.

Monthly range of prices of Calcutta seed on "Association terms," cost, freight, insurance, and sound bags: 1867, January, 67s. to 68s. 6d.; February, 66s. 6d. to 65s. 6d.; March, 66s. to 69s.; April, 66s.; May, 66s.; June, 66s. 6d. to 68s.; July, 68s. to 68s. 6d.; August, 68s. 6d. to 67s. 6d.; September, 67s. 6d.; October, 68s. to 69s. 6d.; November, 68s.; December, 69s. to 67s. 6d.

The stock of seed in public warehouse here and at Liverpool is so insignificant as to render it not worth taking into

account; but at Hull there are 80,500 quarters in addition to crushers' stocks, which are roughly estimated at 17,500 quarters. Albeit we have a moderate quantity, say about 265,000 quarters, consisting of 170,000 quarters East Indies, 75,000 quarters Black Sea, and about 20,000 quarters Danubian, Mediterranean, Baltic, and sundries. Below are annexed the respective annual official returns of the aggregate imports into United Kingdom:

Qrs.	Qrs.
1856 ... 1,180,179	1863 ... 1,088,472
1857 ... 1,051,113	1864 ... 1,104,578
1858 ... 1,017,844	1865 ... 1,434,973
1859 ... 1,270,911	1866 ... 1,435,414
1860 ... 1,330,623	1867 ... 1,158,736
1861 ... 1,160,970	1867 will be about 1,100,000

At Liverpool and London the import has been about the same as last year, whilst into Hull it has been 50,000 quarters short. The imports of the working season, namely, July to June of 1867-1868, will probably be, in round numbers, 1,200,000 quarters. London has imported 260,000 quarters, consisting of 136,700 quarters from East Indies, 102,550 quarters from the Black Sea, 8,180 quarters from the Baltic, 5,500 quarters from Archangel, and remainder from Mediterranean and sundry other ports. The re-export is very little in excess of last year, and amounts to about 20,000 quarters. The aggregate import into the United Kingdom is made up of about 275,000 quarters from Calcutta and Bombay, 330,000 quarters from Petersburg, 31,000 quarters from Archangel, 52,000 from Riga (including 19,000 quarters sowing seed), 55,000 quarters Memel, Königsberg, Danzig, Pillau, and other lower Baltic ports, 317,000 quarters from the Black Sea, and remainder Mediterranean and sundries. The Black Sea cargoes coming to direct ports and calling at Falmouth for orders consisted of about 383,000 quarters, which were discharged as follows: Hull, 104,050 quarters; London, 102,550 quarters; Grimsby, 34,700 quarters; Gloucester, 10,450 quarters; Lowestoft, 8,750 quarters; Southampton, 8,600 quarters; Ipswich, 8,200 quarters; Bristol, 7,850 quarters; Boston, 7,800 quarters; Liverpool, 6,500; Dover, 5,150 quarters; Rochester, 4,850 quarters; Berwick, 3,500 quarters; Aberdeen, 2,600 quarters; and Yarmouth, 2,150 quarters. 48,450 quarters went to Holland, 17,550 quarters to Belgium and other continental ports, and in addition to which about 60,000 quarters went from sundry Black Sea ports direct to Antwerp. The direct exports from the north of Russia have included 78,000 quarters from Petersburg, 80,000 quarters from Archangel, 44,000 quarters from Riga, and about 50,000 quarters from Memel, Königsberg, &c., and also some 51,000 quarters of sowing seed from Riga.

LINSEED OIL has attracted less than ordinary attention during 1867, and the fluctuations have been slight and gradual. Excepting in June, when an urgent want of ready oil for the United States set in, we have never had animated markets, and we are sorry to see a further decreasing general export demand, as shown by the trade returns for the year. We believe this, however, has been counterbalanced by an increased home consumption; for, with a total undiminished make, stocks in first hands are even less than those held at the beginning of last year. £37 was the opening price, and it was maintained with an occasional drop of 20s. per ton until the summer, when the cause above alluded to improved the price to £40; it afterwards declined to £39 and further to £37 in September, but the small make of the two or three previous months caused a reaction to £39 in October, after which it gradually dwindled to £34 10s. last month, and it is not very brisk to-day thereat. We annex our customary tabular statement of monthly

PRICES OF LINSEED OIL.—1867: January, £37 to £36 10s.; February, £36 to £35 10s.; March, £35 10s. to £37 10s.; April, £36; May, £36 to £38; June, £39 to £39 15s.; July, £39 to £39 10s.; August, £39 5s. to £37 15s.; September, £37 to £37 10s.; October, £39 to £38; November, £37 10s. to £34 10s.; December, £34 15s. to £34 10s.

The exportation during the past year will be found short as compared with 1866. It amounts to about 20,000 tons in 1867, against 25,000 in 1866, 37,000 in 1865, 25,000 in 1864, 20,000 in 1863, 26,000 in 1862.

LINSEED CAKES.—The consumption of home-made has been on the same extensive scale as last year, and the high prices of all other feeding stuffs has caused a good trade in Cakes, whilst the value of best town-made has not varied

much: £12 was about the quotation in January and February, £11 10s. to £12 in March, £11 10s. in April and May, £11 5s. in June, £11 10s. during July up to October, when £12 again became the nearest price, and it has continued at same figure ever since.

Of foreign the import into the United Kingdom, of all descriptions, will be found to be nearly equal to that of 1866, viz., 120,000 tons. The quotations were £11 to £11 10s. for American bags, and £11 10s. to £12 for barrels in January, 5s. less was accepted in February, and a further 5s. in March and April, and this was about the lowest point of the year. During the summer months an improvement occurred, and by August we reached the opening prices of the year, since when the values have been about £11 5s. for best bags, and £11 10s. to £11 15s. for barrels.

RAPESEED has again been in very large supply from the East Indies, and this, combined with large stocks of oil held on the Continent, has had the effect of keeping prices very low all the year. In January Calcutta seed, on the spot, was quoted 52s. 6d. to 52s.; 51s. to 49s. in February, 51s. in March, 50s. to 48s. in April, 47s. to 48s. 6d. in May, in June 50s., in July 50s. up to 54s., in August 53s., in September 54s. to 55s., same in October, 53s. to 52s. in November and December. To-day's value is 52s. Bombay Guzerat, 59s.; Poppy, 58s.; Niger, 51s.; Gingelly, 63s. to 65s.

RAPE OIL in January opened at £39 to £39 10s. for English brown, but the make being large, the value declined month by month until the end of May, when £35 5s. was touched. After then, being influenced speculatively, a rally took place, and it recovered all the fall in the early part of August, when £39 10s. to £40 was paid; since that time, with a few fluctuations, it has receded to £36 to £35 10s., and to-day the exact quotation is £35.

RAPE CAKES have been in large demand, especially the last four or five months, and assisted by a Continental inquiry, the value has been enhanced nearly £1 per ton. The quotation of Cakes from East India seed in January was £4 10s., February to March £4 10s. to £4 5s., £4 to £4 5s. until July. In August £4 10s. was the value; September, £4 15s.; October, £5; November, £5 5s. to £5 15s.; and December, £5 5s. to £5 10s.

COTTON SEED.—The import into the United Kingdom has amounted to 93,000 tons, or about the same as in 1866. The market opened in January very firm, at £9 15s. for new spot seed, and the scarcity of old and absence of arrivals of the new crop advanced the value to £10, at which it continued until towards the end of February, when free arrivals dropped the price to £9. During March a further decline took place, and £8 7s. 6d. to £8 5s. accepted; but in April the lowest prices of the year were touched, very free supplies having caused sellers to accept £7 13s. 9d.; and an impression gaining ground that quantity would run short induced crushers to purchase freely, and the value then increased month by month, say from £8 up to £8 17s. 6d. in May, £9 to £9 5s. in June and July, £9 15s. in August, £10 in September, £10 10s. in October, and same figure in November, whilst new seed by steamer realized £11. Early in December the price was £10 7s. 6d., but it declined to £9 2s. 5d. by end of that month; and November, and December shipments have lately been at £9 and £8 15s.

It is difficult to form a correct opinion as to the supplies of 1868, but we have no reason to suppose they will be below those of 1867.

COTTON OIL was marked £32 in January last, and gradually declined to £27 10s. in April, afterwards improved month by month until October, when £34 10s. was paid for crude oil; the value has since receded to £31, which is to-day's nominal quotation.

COTTON CAKES were in active demand at £6 10s. up to March, and after that they declined to £5 5s. to £5 15s. during the summer. Since then the value has improved to £6 10s. up to £7s. and to-day's price for best Cakes is £6 10s.

TALLOW.—The course of this article has been very steady throughout the year. The value of P.Y.C. on the spot in January was 44s. 6d. to 44s., in February and March 43s. 9d. to 42s. 6d., in April 44s. 3d. to 44s. 6d., in May, 44s. to 43s. 3d., in June 43s. 6d. to 44s. 6d., in July and August 44s. 6d. to 45s., in September 44s. to 43s. 6d., in October 45s., in November 43s. 6d. to 42s. 9d., and in December about 43s., which is to-day's quotation.

London, Jan. 1, 1868.

EDWARDS, EASTY, & CO.

THE LIVERPOOL WOOL TRADE.

ANNUAL REPORT.

In the general and unprecedented depression of business which, with hardly any intermission, has prevailed throughout the whole of the past twelve months, the wool trade has shared to a material extent, none of the hopeful anticipations that were pretty freely indulged in at the commencement of the year having been fulfilled. Although the imports, and more especially the exports, of wool, as well as of woollen manufactures, show some increase of business over that of the year 1866, the home trade, one of the main sources of prosperity to this country, has been in the most languid state known for a very long time past. The high prices of provisions, attendant on a deficient harvest, has no doubt been the principal cause of this stagnation—enhanced claims upon the working-classes for the necessaries of life having naturally very much curtailed their means of procuring clothing and comparative luxuries—a circumstance which has again reacted upon at least a portion of the manufacturing population, who, owing to partial or “short time” employment, have had their earnings still further diminished. However, without referring to whatever political or other causes there may have been at work to bring about such protracted dullness, we will hope that symptoms of retarding activity and general improvement will manifest themselves ere long.

The tendency of prices of the raw material has been downwards throughout the year, and their range at the present time is lower than for many years past. The greatest caution has characterized the transactions of both consumers and dealers, and scarcely at any time during the year have they extended their purchases beyond the supply of actual requirements.

Taking the Board of Trade returns as a basis for our remarks, we find that the imports of wool, during the eleven months ending 30th November, are in the aggregate about 4 millions of pounds in excess of those for the same period of 1866. The increase, however, is considerably larger if Australian and Cape wools alone are taken, but this is counterbalanced to some extent by a falling off in East Indian, and wools from European ports.

The exports have also been very much larger than in the previous year, especially as regards Colonial wools, of which to Belgium alone nearly 8½ million pounds, and to France, Germany, and other countries about 11 million pounds more than in 1866 have been sent. In foreign trade there is also an increase of about 3½ millions, whilst the only decrease is in domestic wools to France, which has taken 2 million pounds less this year. The total exports of wool, however, exhibit an increase of upwards of 22 million pounds over the preceding year.

With regard to the quantity of wool left for home consumption it would therefore appear, from the unjoined returns, that deducting the increase of 4 millions in the imports from that of 22 millions in the exports, there are 18 millions of pounds less this year than in 1866; and assuming that the yield of the domestic clip (estimated at 159 millions of pounds, according to a late report incidentally furnished to the “Rivers Commission,” whilst in the West Riding of Yorkshire) has undergone no essential alteration, this would, in some measure, account for the fact that, notwithstanding the limited demand we have experienced now for nearly eighteen months, stocks, with perhaps one or two exceptions, have accumulated to a much less extent than might be supposed.

The increase in the declared value of the exports of woollen yarns and manufactures is not important, the corresponding figures being £24,050,842, for the eleven months of 1867, against £24,106,367, for those of 1866; but taking into consideration that both yarns and goods during the past year have more or less depreciated in value, the quantities exported must consequently amount to considerably more than in the previous one, and thus prove a steady progress in the export trade of this important branch of industry.

AUSTRALASIAN as well as CAPE OF GOOD HOPE WOOLS have arrived in greatly increased quantities, and have, as usual, been brought forward in London at the quarterly public sales (including withdrawals of former sales), viz.: 547,119

bales, including 180,963 bales Capes. About 240,000 bales, it is computed, have been taken for export, chiefly to France and Belgium. Prices have ruled lower at each succeeding series, but the decline has been most severely felt on all fairly and inferior descriptions, the reduction on well-managed and superior shipments being proportionately less, as will be seen by comparing this year's quotations with those of last year at the same period. The quantity of superior and carefully-managed flocks has been comparatively small, the condition and quality of the great bulk of the imports leaving still much to be desired.

SPANISH AND PORTUGAL.—From Spain we have received, as in former years, only greasy and black wools, the demand for which has not been very active. In Spanish frontier a fair amount of business has been done at reduced prices, but the imports have been much less than in former years, and this also applies to Oporto wools. The decline in price of Oporto fleeces, which is always greatly affected by the value of English wools, has been rather considerable, though not quite to the same extent as that of the latter; whilst the lower grades of Oporto have suffered comparatively little, owing in some measure to the greatly decreased supplies.

The imports of RIVER PLATE WOOLS are somewhat less than in 1866, but equal to those of the three preceding years; the bulk of this class, however, has again gone direct to Antwerp. Fine washed as well as greasy River Plate are gaining favour more and more with our home manufacturers; the demand for them has been very fair throughout the year, and prices have ranged pretty much on the same level as at Antwerp, the reduction in value being much less than in Santiago, Cordov, and similar kinds, on which the decline is very considerable, although not out of proportion to that of domestic wools, by which they are always greatly influenced both as to demand and price.

ALPACA AND PERUVIAN.—The arrivals of the former have been rather less than in the previous year. The principal sales were made in June last; at other times the demand has been languid, and prices have suffered a great reduction since the day twelvemonth, when our highest quotation was 3s. 4d., whilst sales made quite recently have been at 2s. 1d. per lb. Sheep's wool from the west coast of South America has arrived in increased quantities; and as transactions have (with one or two exceptions) been limited, stocks have increased to a considerable extent, while prices have suffered a serious decline. Lima and Chili have been in fair request, and the reduction in value is less marked.

EAST INDIA AND PERSIAN.—We have to report a material falling off in the arrivals, if compared with former years, or with last year in particular. The quarterly sales by public auction have taken place here at the following dates, when the imports along with parcels withdrawn from former sales were offered, viz.: From 29th January to 8th February, 24,227 bales; from 29th April to 4th May, 13,380 bales; from 29th July to 3rd August, 15,403 bales; from 29th October to 2nd of November, 15,884 bales; in all, 68,893 bales; whilst in 1866 the total quantity amounted to 79,414 bales. These wools have participated in the general decline; and although there have been some fluctuations according to the scarcity or abundance of one or the other class at the different series of sales, prices on the whole are now lower than they have been for some time, white carding wools especially, as they, like many other foreign descriptions, have suffered from the depression that has prevailed in English wools. Persian have been chiefly of the Bastard kind, exceedingly little true-bred wool having come forward during the past year; but even the former has been of rather low character, and our quotations are consequently lower than they otherwise might have been. The quantity of unwashed East India has this year been much less than in the previous one. The fresh arrivals for our January series amount at present to only 6,671 bales.

RUSSIA.—Donakoi wools having, during the greater part of the past year, been sold for export to the United States, in addition to direct shipments to that market, much less of it has been offered to our home trade, and prices have ruled higher

than they otherwise would have done, until recently, when, at the public sales in London, a large quantity was disposed of at a serious decline from late quotations.

EGYPTIAN AND OTHER MEDITERRANEAN WOOLS have shared in the general reduction of value. The imports have been about on a par with those of former years, and the demand pretty equal to the supply.

BARRAK.—The bulk of this description has chiefly gone to London, on account of greater facilities for direct shipments to that port. The demand has been dull and sluggish throughout the year, and prices have suffered accordingly.

ICELAND.—The imports show a decrease as compared with last year. The stock left on hand at the close of 1866 having kept the trade well supplied until the arrival of the new clip, and the demand being anything but animated, consumers had no inducement to enter into contracts "for arrival" as in former years; and when the fresh imports came in, they fully shared in the decline of other kinds of similar character.

MOHAIR has fallen materially in price. This article has at no period during the last twelve months commanded much attention; and although the imports have been less than in

1866, stocks here amount at present to about 4,500 bags, whilst its value has gradually receded from 3s. 9d. this time last year to 2s. 5d. per lb., at which price we quote it nominally to-day.

DOMESTIC WOOLS.—In our report at the close of the previous year we had to announce a considerable decline from former rates, and, instead of the anticipated improvement, prices have continued to give way still more, until, at clip time, they had receded about 15 per cent. A further gradual fall of another 15 per cent. has taken place since then, and we find that prices now range lower than they have been since the commencement of the year 1856.

SHEEPSKINS.—The imports from the River Plate district amount this year to 8,783 bales. They have been in fair request and fully maintained their value in proportion to that of wool, owing in a large measure to the steady and increasing demand from our home manufacturers for River Plate skin wools, which can now be prepared almost entirely free from burrs.

R. & W. RONALD & SONS.

Liverpool, Dec. 31.

LIVERPOOL ANNUAL WOOL REPORT.

The year just brought to a close has been one of general depression and disaster throughout the commercial world, in which the wool trade has shared to an almost unprecedented extent, and we have again to report a still greater reduction in prices of the raw material generally than at the close of 1866; the tendency of prices was downward from the commencement of the year, and has continued throughout, and the present quotations are now lower than have been for ten years past; this fact, combined with the low range of the money market, which has ruled from 3½ down to 2 per cent. (the present bank rate), would naturally have induced the expectation of an increased and profitable business; but, on the contrary, the home trade, which is the principal indicator of our commercial prosperity, has been languid and unprofitable throughout the year to a greater degree than for many years past, and this has been increased by the high, indeed almost prohibitory, duties on manufactures and the raw material imposed by the present American tariff; the transactions of the past year have consequently been characterized by the greatest caution on the part of both dealers and manufacturers, and confined to the actual and immediate requirements of the trade, and the year closes with but little prospect of any immediate improvement.

IMPORTS AND EXPORTS.—Referring to the Board-of-Trade returns, we find that the imports of wool for the first eleven months ending 31st November last show an increase of about 4 millions of pounds (chiefly on Australian and Cape wools); but the exports have also been to a much larger extent, especially referring to our colonial wools, which into Belgium alone amount to about 8 millions, and to France and other countries about 11 millions. Foreign wools also show an increase of 3 millions, the only decrease being on domestic wools, amounting to about 2 millions, making an aggregate increase of about 90 millions of pounds over the exports of 1866, so that the amount left for home consumption has not been excessive, which will account for a smaller accumulation of stocks generally than might have been naturally expected; the difference in the value of yarns and manufactured goods is not large—£24,050,642 against £24,106,367 in 1866—but taking into account the depreciation in value of the raw material, the actual quantity will show a considerable increase, and speaks favourably for this one and very important branch of our trade.

AUSTRALIAN AND CAPE OF GOOD HOPE.—The quantity brought forward at the several quarterly sales in London amount to the unprecedented quantity of 547,120 bales, and but for the active Continental demand, as noted above, the results must have proved even more unprofitable for importers; for it is estimated that of this quantity as much as 240,000 bales have been taken, chiefly for France and Belgium, the sales opened with a downward tendency, which has continued without intermission throughout the year, and now shows a reduction of 10 to 15 per cent. on Australian, and 15 to 20 per

cent. on Capes, as in quality and condition, as compared with the closing prices of 1866, the greatest fall being noticeably on low and ill-conditioned stocks, which have unfortunately been in excess of previous years.

SPANISH AND PORTUGAL.—Of fine washed wools, such as Leonese, Segovia, &c., we have had no arrivals for many years past; the greasy white and black Spanish wools have been but little inquired for and very unsaleable, except at very low rates; for frontier and Alentijo washed there has been a fair demand, but imports have been small, and prices quite on a par with other clothing wools. In Oporto fleeces, however, the decline is much more marked, as coming into competition with English combing wools; but in Lambs and Cotts the fall is less marked.

PERUVIAN SHEEP'S WOOL AND ALPACA.—There has been a fair demand for the better sorts of Arequipa washed fleeces; but as holders could not make up their minds to submit to the continued reducing rates which have ruled throughout the year, the consequence has been that stocks have gradually increased to an undue extent, and some forced sales lately made have established a reduction of 4d. to 5d. per lb. on these descriptions, as compared with prices ruling at the commencement of the year. Lima and Chili wools, particularly the finer qualities, have been in better demand, and the fall in these sorts is not so large. In Alpaca there has been a fair average consumption, but both demand and prices have been irregular, and the last sales show a serious reduction in value, good first quality realizing only 2s. to 2s. 1d., fair average 1s. 10½d., and inferior qualities in proportion; whereas at this period last year good assortments were worth 3s. 3d. to 3s. 4d. per lb.

BUENOS AYRES AND MONTE VIDEO.—For the finer qualities of these wools, both washed and in grease, there has been a fair demand, and prices of these sorts have not shown the extreme depreciation; the bulk of these wools, however, as has been the case for several years past, has gone direct to France and Belgium, where prices have ruled more in favour of importers. Cordova, Santiago, &c., have been in fair demand but prices of these sorts have of late been equally affected by the general depression.

EAST INDIA AND PERSIAN.—The chief feature worthy of notice is the falling off of the imports, this year the arrivals being only 46,116 bales against 79,732 bales in 1866; there has been a fair demand for these wools during the past year, but they have participated to about an average extent in the general depreciation; the greatest fall, however, has been in the long fine carding wools, which had been run up to an undue extent, by their competition with bright-haired English wools, and with them have consequently suffered the greater depreciation. The quantity of good true-bred Persian wool arrived this year has been unusually small, the imports chiefly consisting of low bastard wools, which proved very unsaleable even at the great reduction quoted, but the fine true-bred sorts

would now be very saleable at proportionately much better prices.

EGYPTIAN, TURKEY, SMYRNA, AND OTHER LEVANT AND MEDITERRANEAN WOOLS have been heavy of sale throughout the year, and there is nothing particularly worthy of remark respecting them. The supply has been moderate, but more than equal to the demand, and they participate in the general reduction.

RUSSIAN.—We have had but a small supply of Donskoi fleeces and lamb throughout the year, direct shipments having been made to a considerable extent to the United States and to our own manufacturers; the chief demand has been for America, and the closing prices, as realized at the public sales in London last month, show a decline of about 30 per cent. on the closing prices of the previous year.

MOGADOR, BARBARY, &c., with the exception of the fair quality, have been very heavy of sale during the past twelve months; stocks have been unusually small, the bulk of these wools having gone to London this season, where they continue very heavy of sale, even at the greatly reduced quotations.

DOMESTIC.—The clip of all domestic wools was very heavy in the last year, stimulated by the late extravagantly high prices and the result of the cattle-plague; but with few exceptions, during the past twelve months the demand has been sluggish and unsatisfactory, with prices gradually receding week after week, until at the present moment our quotations show a lower range, particularly for combing wools, than has existed for the past ten years; but notwithstanding this, the trade in the manufacturing districts continues very dull and unsatisfactory, and the operations of spinners, manufacturers, and dealers are still confined to their immediate and most pressing requirements, without any apparent prospect of speedy amelioration: we trust, however, that as the new year progresses we may experience some revival of confidence, and that at the expiration of the present year we may be enabled to lay before our friends a more satisfactory report than the present most unfavourable résumé of the past year of 1866.

HANCE, SON, & Co.

January, 1868.

MANURES, &c.

LIVERPOOL PRICES CURRENT.

ANNUAL REPORT.

LIVERPOOL, Dec. 31.—**BONES** have not as heretofore fluctuated much the whole year, and from the lowest to the highest prices there is not a difference of over 12s. 6d. per ton. The imports from South America have fallen off, while those from other parts have increased; the former owing to the limited import here of hides, with which the bones come principally as dunnage; the latter owing to the low prices obtainable at outputs; had it not been for this, we should have had extreme prices. Our charcoal makers have been sparingly supplied with their qualities out of the arrivals, and these descriptions have scarcely varied 5s. per ton. The lowest prices touched was in June and July, when common grinders were sold at £4 17s. 6d. to £5 per ton. Our market closes at prices exactly similar to those current when the year commenced, viz., common at £5 10s., legs at £5 10s.; for steamed up to £6 per ton for burners, and shanks £6 7s. 6d. to £6 10s. per ton. The stock does not reach 200 tons. Horn piths are now used for glue and size making, and have this past year brought previously unheard of prices, £7 2s. 6d. to £7 5s. per ton having been paid in July. This, however, caused outputs to send all their supplies this way, and prices gradually receded, and may be to-day quoted at £5 10s. per ton. Imports about 7,000 tons, against 7,400 tons in 1866.

BONE ASH.—The arrivals having nearly always kept our market supplied from ships' side, and sellers being more anxious to realise than to hold, prices have not varied much. We commenced the year with £4 5s.; in February sales were made at £4 1s. 3d., in April £4 5s. was again touched, since then up to the present month (except in August when there was nothing landing, and sales were made at £4 10s.), there has not been much alteration; within the past week £4 has been accepted, but to-day there is nothing to be had under £4 2s. 6d. per ton. For outputs, owing to large arrivals from Rio Grande, prices have not fluctuated more than 5s. per ton (except when there has been a restriction of ports). The lowest prices during the year were £4 2s. 6d. on 70 per cent. for ash and £5 per ton for bones, and the highest £4 10s. on 70 per cent. for ash and £5 10s. for bones, the last-named however for Rio Grande or for very small cargoes. The large arrivals from Rio Grande may be accounted for by the low price of hides here, shippers being most anxious to send the article of produce that would lose the least money. Although prices are so low, the imports from the River Plate have not all lost money (in many instances ships were obtained there as low as 17s. 6d. per ton), as captains in many cases rather than accept current freights loaded on ship's account, and after realising here have gone back again.

CALCINED BONES AND POTTERY BONE ASH.—Nothing of moment having been imported during the fall of 1866, we

commenced the present year with almost no stock, and the first cargo of the former that offered was eagerly taken at £6 per ton, and two cargoes of the latter realised £5 17s. 6d. per ton; it was soon however found that there were more cargoes on the way and shipping than the trade could do with, and both therefore gradually gave way until calcined bones were sold at £5 5s., and ash as low as £5 per ton. The market has now, however, recovered a little, and £5 10s. could be obtained for calcined, to-day, and there are no sellers of ash under £5 5s. Imports here of bone ash, calcined bones, and pottery ash, exceed 10,000 tons, and the stock of bone ash in first hands is about 1,200 tons.

ANIMAL CHARCOAL has not sold so well this year, and the parties who contract with the sugar refiners have large stocks, and to realise must, we fear, submit to a loss; to-day it can be purchased at £4 5s. on 70 per cent.

CRUST PHOSPHATE OF LIME.—The Estramadura has been imported here, and at outputs in small quantities; the company working the mines tried to establish a scale of prices, to be ruled by the percentage of phosphates, at which however they could not sell, and indeed it has been hard to find buyers at 10d. per unit for 70 per cent., at which there is a parcel now offering here. Sombroero, and Kooria Moorla—nearly the whole quantity imported of these descriptions goes at once into consumption without being offered on the market. Canadian is again a failure, and little or none coming; the last parcel imported here can be bought at 10d. per unit, and the sellers represent it as containing 97 per cent.

SULPHATE OF AMMONIA.—The low price of this article for the past few years has forced most manufacturers to use their liquor for other products; this, coupled with the decreased Continental supply, has caused prices to advance fully £3 per ton during the year, and this advance has been gradual since the end of June, when the country buyers generally commenced to make contracts for forward delivery. To-day dark is hard to buy at £12 10s. per ton, and £13 per ton is readily obtainable for white.

NITRATE OF SODA.—Prices during 1867 have not varied much, and although holders have at times (when there has not been any but in warehouse) tried to get prices up, they have only succeeded in part, and the range has been from 10s. in January to 11s. 3d. in March, down to 10s. in June up to 11s. in November; and now the market price is 10s. 6d. per cwt. In November it was thought we should have high prices during the coming spring; but the heavy arrivals this month, over 5,500 tons, have caused the operators to think differently; the alkali trade too being so bad, will materially decrease the consumption, and we fully expect on the publication of to-day's stock we shall find nothing less than what was held last year,

although on the 30th November it stood at 8,750 tons, against 13,400 tons same time last year. The cargoes imported this year are in many instances of very inferior quality, and it is not an uncommon occurrence to find cargoes with 10 per cent. refraction; indeed, few are found under 5 per cent. except it be refined. Imports, 27,000 tons.

GUANO.—There has not been anything of importance done in this article. Malden Island has gone into other hands, and a very fine cargo is now landing here testing 75 per cent. phosphates, and £5 15s. nett cash in bulk is the selling price for quantities; imports 1,530 tons. Upper Peruvian gradually advanced from £6 5s. (at which it stood for nearly six months without demand) up to £6 12s. 6d., at which there is little or none left, and the imports being only two cargoes of 3,394 tons, the transactions have not been large. Peruvian there is no change in, and the imports are 14,415 tons.

BRIMSTONE at the commencement of the year stood at £6 17s. 6d. for best seconds, and £6 10s. per ton for best thirds. The market remained steady up to April, when sales were made at a decline of 10s. per ton, after which there was a continued advance, until our market at the end of last month was cleared of best seconds, and £7 was the price for thirds. Our stock only about 100 tons, and imports 10,015.

FEEDING CAKE.—There has been a fair demand for all through the year, owing principally to the short supply of Indian corn; as however this market is always ruled by dealers, it is almost impossible to get at true transactions. From January to April prices declined, after which the market was steady

until November, when prices suddenly advanced, and have remained without any great change since; prices closing at 10s. per ton above those current at the beginning of the year for Linseed, and 20s. per ton for decorticated Cotton Seed.

PRICES CURRENT DECEMBER 31.

Bones, common grinding, £5 10s. to £5 12s. 6d. per ton; legs, £5 10s. to £6 2s. 6d.; shanks, £6 10s. to £6 15s. Bone ash, ordinary, for manufacturing, £4 2s. 6d. to £4 10s. per ton on 70 per cent., calcined, for pottery ware, £5 5s. to £6. Animal Charcoal, spent, £4 5s. to £4 10s. per ton on 70 per cent. Brimstone, best thirds, £7 per ton. Nitrate of Soda, 10s. 6d. to 11s. per cwt. Muriate of Potash, £8 5s. per ton on 80 per cent. Borate of Lime, 17s. to 18s. per cwt. Sulphate of Ammonia, as in quality, £12 10s. to £14 per ton. Gypsum, ground, free on board at Bristol Channel, 15s.; ditto, on spot, 25s. to 30s. per ton. Salt, common, 10s. 8d. per ton. Linseed Cakes, English, £11 10s. to £12 per ton; American, in bags, thin oblong, £11 to £11 5s. Cotton Seed Cakes, undecorticated, £6 10s. to £6 15s. per ton; ditto, decorticated American, £9 to £9 5s. Rape Cakes, English, £6 to £6 10s. per ton. Guano, Peruvian, £12 7s. 6d. to £13 5s. per ton; ditto, ditto, damaged and discoloured, £10 to £11; ditto Upper Peruvian, £6 12s. 6d. to £6 15s.; ditto, Malden Island, £3 10s. to £6; ditto, Ichaboe, £9. Acid, Sulphuric Brown, 148 to 150 degrees, without Carboys, £4 to £4 5s. per ton; ditto, Muriatic, ditto, 10s. to 20s. per ton.

TOWILL BROTHERS.

TRADE OF THE PORT OF HULL.

ANNUAL REPORT FOR THE YEAR 1867.

HULL, Jan. 3.—Notwithstanding the continued depression in trade generally, consequent upon the absence of confidence, the result of social as well as commercial and political circumstances, it is gratifying to be enabled to record that the business of this port presents no feature of material decrease—the tonnage entering the port being

	1867.
Total tonnage upon which dock dues have been paid	1,330,202
Number of vessels reported inwards upon foreign voyages	3,320
Total tonnage of ditto	954,329
Of the last mention there were British	680,086
Ditto Foreign	294,243
Steam vessels frequenting the port in the foreign trade	157
Tonnage of ditto	77,061

WHEAT.—The wheat trade of 1867 has been in many respects the counterpart of the preceding year, which was also one of the few profitable epochs in this branch of commerce; the exhaustion of stocks of old wheat alluded to in our last annual report, the deficient quality of the crops of 1865 and 1866 in Poland and Northern Germany, and the almost continued exportation of wheat hence to France and Belgium, as well as the certainly unexpected shipments of several cargoes of Californian wheat to New York, of the unsettled state of politics on the Continent arising out of the Luxembourg question, and the ascertained deficient yield of our own crop (rationally estimated from 10 to 25 per cent. below the average of seasons), all tended to enhance the price of wheat in this country and to cause at times a certain amount of activity in the trade; such a general clearance of stocks has not been experienced since the importation of wheat became of such vast and vital importance to the population of this country; we are indebted to those distant countries California, Chili, and Australia for such large supplies and unsurpassed quality, that our prices have not risen to a pitch the most sanguine farmer or ardent "free-trader" ever contemplated possible, with all the countries of the world ready to sell us their surplus, and the Bank of England rate of discount at 2 per cent. The total import of Wheat and Flour into the United Kingdom

during the past year was 9,000,000 qrs. with an average price of English Wheat of 64s. per qr., against 6,712,268 qrs. and 49s. 11d. in 1866; 5,800,000 qrs. and 41s. 10d. in 1865; 7,065,145 qrs. and 40s. 2d. in 1864; 6,604,142 qrs. and 44s. 9d. in 1863; and 10,752,928 qrs. and 55s. 5d. in 1862. The arrivals into Hull during the last year were 433,287 qrs., the largest on record, except 1862, when the arrivals amounted to 445,300 qrs.; of this the Baltic sent us only about one-third, whereas in former years probably two-thirds of our imports were from the Prussian ports. The bulk of our supply during 1867 has been from Odessa, the Danube and Egypt—California, Chilian, and Australia having also contributed some quantity. It will thus be seen, that notwithstanding such a high range of prices on our market, the Lower Baltic ports have not been able to spare us over our usual quantity of wheat, and although they have sold some quantity to France, Holland, and Belgium, yet the total exports do not reach those of former years, and there is no doubt that stocks in warehouse have dwindled down to the lowest ebb, and we have received all that could be spared; the prospects for assistance thence during the New Year we consider are even less favourable than they were last year, as the new crop is undoubtedly a poor one in Poland and not an average one in Germany; the rye crop—the staple food of the populations of Northern Europe—is admitted to be almost a failure, so much so that a famine prevails in some of the Swedish and Finnish provinces, and a reference to the unprecedented falling off of the import of barley into this port will tend further to confirm this failure, as our usual supply of this cereal from Denmark, &c., has been diverted thither to feed the starving populations of those countries. We had on the 1st January, 1867, a stock of 60,000 qrs. wheat against 120,000 qrs. in 1866, and we begin the new year with 62,000 qrs., of which barely the half consists of Baltic qualities, and the remainder Odessa, Danubian, and Egyptian, thus showing that the whole of the year's large import has gone into consumption. During the winter months the Baltic supplies must necessarily be small, and we must therefore look to other countries for our supplies; a full average quantity of wheat, for this season of the year, is on passage from Southern Europe, Egypt, America, and Australia, and therefore it is to be hoped that, notwithstanding the great inroads made into our own crop already, and the small stocks in our granaries,

we shall have no lack of trade. In the absence of reliable official returns, we are unable to state the quantity of wheat exported to France and Belgium during the year past, but it has not been insignificant, and should our prices not advance materially, the demand is likely to continue for some time longer—these plain facts tend to show that we shall require fully as large an import during the present as the past year: whether we shall get our supplies on lower or higher terms is not for us to attempt to predict. The United States of America, Australia, Egypt, and Hungary, have reaped good crops; France and England—the two great consuming countries—have not average crops, and are competitors for the surplus of other nations. The fluctuations in prices during the year have been considerable, the best red Yorkshire wheat being worth 60s. at the beginning, and 71s. at the close of the year: the highest point reached was on the 20th October, 76s. per qr. of 50 lbs. for best farmers' red, and 83s. to 86s. for the finest Danzig white, at which time stocks had become unprecedentedly low, not only in our port, but all over the kingdom; the deficient yield of the new crop in this country, as well as France, became known, and these circumstances, together with a general apprehension of war between France and Prussia, caused an advance in prices of 12s. per qr. in six weeks—since then red wheat declined 5s., and white only 1s. per qr. The demand during the past fourteen days revived from the lethargy into which the trade sunk during November, and as the millers and the public have been working from "hand to mouth" for two months and are low in stock, a healthy business may be expected to ensue. We quote English red 69s. to 71s. per 50 lbs., extra Danzig white 82s. to 85s., high mixed and Australian 76s. to 79s., red Baltic 68s. to 71s., Polish Odessa 70s. to 72s., Danubian and St. Petersburg 62s. to 66s., Egyptian 57s. to 58s., prepared 60s. per 48 lbs.

BARLEY.—The large imports and high prices with which last year closed, were continued in the present; but towards the end of March supplies, which on the aggregate are considerably below those of last year, began to fall off, whilst about the middle of February prices had begun to decline, and they continued so to do until the end of the maling season. Later on the scarcity of feeding corn caused a slight reaction, but any great improvement towards the close of the year has been prevented by the good result of the new home-crop. The crops in the other countries in the North of Europe have on the whole not been abundant, and large quantities have been absorbed by the home-consumption of the respective producing countries, or have been diverted into other channels (a notable quantity has for instance been sent to relieve the famine-stricken countries in the North of Sweden), and as next to no arrivals have reached us during several months, excepting a few cargoes from the Black Sea, small quantities of Saale, and within the last few days three or four cargoes from Denmark, the principal consumption, especially for malting, has hitherto had to be supplied by our own crop. We close this year, as compared with last, with prices a couple of shillings per qr. lower for malting, but 4s. to 5s. higher for grinding, viz., fine English malting 44s. to 47s., stout Danish 42s. to 43s., and stout grinding 40s. to 41s. per 48 lbs. Our stocks are only 4,000 qrs. against 35,000 qrs. last year.

OATS.—The arrivals from abroad have about kept pace with last year's, thus exceeding by far those of many preceding ones. Prices gradually gave way in the first part of the year, but as supplies diminished they again crept up, and are now about 2s. higher than at the entry upon the present year; viz., 27s. to 29s. per 33 lbs. for good new English, and 29s. to 30s. for kiln-dried Swedish and Danish. Our stocks are small, being only 5,000 qrs. against 18,000 qrs. last year.

PEAS.—Of this pulse our import is only one-half as compared with last year, and our present stocks almost nil. Owing to the great scarcity of the article, prices advanced materially towards the end of the year, but have again receded a little; they are, however, yet about 6s. above the currencies at the end of last year, viz., 47s. to 48s. per 50 lbs. for white feeding.

BEANS.—We have a trifle larger supplies this year than last—a good proportion is from Egypt, which country has again begun to export largely of this article. Prices declined during the first half of the year, then again slowly advanced, and are now about 2s. per qr. higher than at the end of last year; viz., 46s. to 48s. per 50 lbs. for good middle-sized. Stocks are 5,000 qrs. against 10,000 qrs. in 1866.

AGRICULTURAL SEEDS.—As anticipated in our last year's report, the crops of red and white cloverseed in 1866 proved to have been quite below an average, and thus prices were pretty firmly maintained all through the sowing season. White, especially of fine quality, having taken a higher range than for several years previously, and at the close of the season the stocks on hand were unusually small, and composed mostly of low and inferior quality, consequently there were very few transactions for holding over during the summer, and the requirements of the coming season will have to be supplied mainly from the new crops of 1867; and as respects red cloverseed, judging from the samples that have appeared, and the reports that have been received from the various producing districts, the new crop appears to have been satisfactory both in quality and yield. Prices have not varied much since the new samples first came forward. The new crop of white cloverseed, on the contrary, is very poor in quality, scarcely any having yet appeared, and the small cotchels that do come forward command extreme prices on account of their scarcity.

LINSEED.—The import during the past year has fallen short of the large quantity received in 1866, but we still maintain our position as the largest importers of linseed in the United Kingdom.

Our direct import has been	528,804
London and Liverpool	20,000
Stock, December 1866	120,000
Total supply	668,804
Deduct present stock	96,000
Showing actual consumption	567,804
Against ditto in 1866	572,682

The expectations held out at the close of last year of a large supply of seed from Northern Russia, and also from India, have not been fully realised. It is true that the crop in the North of Russia was a large one, the export from Petersburg being 403,025 qrs., against 378,009 qrs. in 1866, but a much larger quantity than usual of this supply found its way to the Continent—our import from Petersburg being 278,024 qrs., against 290,745 qrs. in the previous year. The same fact has diverted supply operated also in reference to India, the Americans having been the largest buyers in that market. They commenced with large stocks in warehouse and a quiet market—Black Sea held at 67s., and Petersburg at 65s. During the first five months the market continued without animation, crushers buying only for the supply of immediate wants, and prices slowly but continuously drooping up to the end of May—Black Sea being then worth 62s., and Petersburg 58s. The opening of the navigation in the Baltic being unusually late last spring, the middle of June found us with a deficient import, as compared with 1860, of 62,065 qrs., a complete exhaustion of stocks in first hands, and a small mill stock, so that all arrivals during June and July went into consumption ex-ship, giving a firm tone to the market with an advance of 2s. in prices, which was maintained until the middle of August when large arrivals produced their natural result, prices gradually receding to 62s. for Black Sea, and 60s. for finest Petersburg, remaining about stationary until October, when a steady advance in values commenced, which, with slight fluctuations has been sustained, the year closing at 65s. Black Sea, and 63s. Petersburg. The stock in all hands is smaller than was being estimated at 96,000 qrs., against 120,000 qrs. last year. The quantity afloat from India and Black Sea to the United Kingdom and Continent is estimated at 60,000 qrs. in excess of December last. The import into Grimsby was 46,000 qrs. into Gainsboro' 4,300 qrs.

LINSEED OIL.—During this year the fluctuations in the value of this article have not been so great as have been experienced in late years. In January the quotations were 39d., receding to 35s. in February, the lowest point reached until November. During the summer months 39s. 6d. was the highest value touched. We have had falling markets during the last two months. The present value is 34s. 6d. The export this year has been less than for several years past, being only 7,625 tons, against 9,404 tons in 1866. The quantity forwarded to London was 4,050 tons, against 6,240 tons in 1866.

LINSEED CAKES.—This article has ranged during the year at very high prices owing to a deficient supply of linseed,

a bad demand for oil during the autumn and cake-consuming months. Pure cakes have now reached £12 10s., at which price there is a fair consumption now going on, and will doubtless be stimulated by the advancing grain markets.

RAPSEED AND RUBEN.—The import of this year is rather under that of 1865, which was much beyond that of former years, being respectively 110,527, and 122,254 qrs. The stock on hand in the beginning of the year being considerable, German seed offered at 58s., Black Sea 34s. per qr., at which rates a slow demand gradually reduced stocks, until the appearance of offers of the new crop (which at this stage promised well) at 52s. free on board for German Rubsen. The weather being unfavourable, prices advanced at the shipping ports to 55s., which interfered with business. A few transactions took place at 54s. 6d., but the uncertainty as regards the harvest limited business. The first arrival took place beginning of August, the quality and condition being a fair average. Prices advanced to 56s. to 57s. cost, freight, and insurance for September shipment, and a further rise of 1s. to 2s. took place beginning of October, reaching 59s. for Rubsen, with a limited business. Prices receded towards the close of the year to 56s., and in one instance less was accepted ex-ship. A few cargoes of Black Sea seed made their appearance during the year, and sold at from 34s. to 37s. for Odessa seed, Danubian bringing 58s. to 60s. delivered. We close the year with little or nothing doing, and with a stock of about 20,000 qrs. in all hands.

RAPE OIL.—With a large stocks here and on the Continent, to commence the year with, a limited consumption in our manufacturing districts, combined with the more extended use of petroleum as a substitute for rape oil, prices, which ranged at about £38 naked for brown oil, fell from £2 to £3 during the spring months. A slight rally took place in the middle of the year from speculative action, advancing the value on the spot to £33, and for the last four months of the year to £39 5s., naked, was paid. During September and October prices remained steady, but fell towards the close of the year to £35 for brown naked, and £39 for refined in casks.

RAPE CAKES.—Opening the year at £5 15s., for green and £4 10s. for brown some degree of firmness prevailed in our market, but towards the middle of the year the value declined, and best green could not be quoted above £5 per ton. Towards the close prices rallied considerably, and we had buyers in October at £6 5s. with a steady demand, and at which rate we close the year.

COTTONSEED.—The import this year is 23,107 tons, against 31,280 tons in 1866; 42,034 tons in 1865; and 18,901 tons in 1864, the first year of regular import of this useful seed, the whole of which, with trifling exceptions, is the produce of Egypt. The season opened with short stocks, and with the value at £10 5s. per ton, at which the small arrivals of the new crop were sold; more liberal imports reduced the price to £9, and by the beginning of April to £7 15s., which was the lowest point reached during the year; by the end of May £6 10s. was paid, and in July £9 7s. 6d. to £9 10s. for seed, advancing in August to £9 15s., and by the end of September to £10 in all positions, the rates for December shipment of the new crop being £9 7s. 6d. delivered. A further advance for seed on the spot took place in October, when £10 10s. was paid on the spot; £10 7s. 6d. for November shipment per sailing vessel, and £11 2s. 6d. per steamer, the highest price during the year. The trade ruled dull for the rest of the year, with sellers of new seed of the crop of 1867 at £10 delivered here, and for the first three months of 1868 at £9 10s. Stocks almost nil.

COTTONSEED OIL.—The year commenced with crude, naked, at 28s. per cwt., and refined in casks at 36s. These prices ruled for both present and forward delivery, up to the end of April, when a livelier demand occurred, and prices gradually advanced up to June, when 30s. was paid for crude and 36s. 6d. refined. A further advance of 2s. took place in August, which continued till October, the value of crude being 32s., refined 40s. Prices gradually receded thereafter, and we close the year with crude at 29s. and refined 37s. on the spot.

COTTONSEED CAKES.—Great scarcity at the close of the previous year, advanced prices, £7 5s. being the value from new seed, and £6 17s. 6d. from old, at which rates, during the first two months of the year, the market was almost cleared. By the beginning of March, anticipating arrivals of

seed, crushers reduced the price 20s., at which rate a large demand ensued for early delivery. A further reduction to £5 took place in April with similar effect, which was the lowest quotation reached. By the end of May prices had advanced 10s. to 15s. per ton, which continued with a rather slow sale up to the end of July, when a speculative demand raised the value to £6 to £6 5s. per ton. These rates ruled up to October, when from scarcity crushers demanded £6 15s. to £7, a price which once more during the year interfered with consumption, causing a reduction in November to £6 12s. 6d. on the spot, and £6 10s. first four months of 1868. We close the year at these rates with a good demand and limited stocks.

OLIVE OIL.—The import for 1867 has been 5,870 tons against 6,945 in 1866, 7,555 in 1865, 5,195 in 1864, and 5,177 in 1863. Prices have ruled high and irregular throughout the year owing partly to political events, the unsettled state of the exchanges, and short and partial crops in Italy, the first three months from £40 to £45, the next six months an advance took place and prices ruled from £60 to £69, and in October £71 was paid for Gallipoli, which was very scarce, although less was taken for some which was not equal to the usual quality of Gallipoli. Regarding future supplies, the crops are reported failures in many places, and it is supposed prices will rule high, in which case less supplies may come to hand. Stocks are about 328 tons.

FLAX.—The import in 1867 was 10,336 tons, against 10,806 tons in 1866. The trade for the past year has not been satisfactory one for the importer, the continued depression in the linen trade, caused to a considerable extent by the anomalous position of the cotton manufacturers, has rendered business difficult for both merchants and consumers. The prospect for the coming year is considerably brighter, prices abroad having given way to a moderate level. The market opened weak in January, £58 being the price of Riga F. P. K., and remaining at this figure until July, when an advance of £3 per ton was obtained, which advance was lost in October F. P. K. being then held at £57 per ton. During the last three months of the year prices have continued to give way, and we close the year with F. P. K. at £53 per ton.

HEMP.—The difficulties attending the transit of goods from the interior of Russia during the past season have considerably reduced the expected quantity of this article from thence. The total import into Hull for 1867 has been 8,202 tons, viz., 5,016 tons from St. Petersburg, 2,072 tons from Riga, and 274 tons from the lower ports of the Baltic. The import for 1866 amounted to 5,075 tons. As we anticipated in our last report, the light stocks then held were the means of keeping up prices, and owing to actual scarcity before the first arrivals of the new season, a considerable advance took place. Unexpected delay in the delivery of new goods at Petersburg and Riga further enhanced the values in this country, and in August clean was £40 to £41. The prospect of the export from Russia showing a probable short supply of 8,000 to 9,000 tons confirmed this advance for a time. The continued depression of trade, and the ascertained deficiency being reduced to about 5,000 tons, however, checked a further rise, and resulted in bringing the price of clean down to £38; the present value is £38 10s. Riga qualities are comparatively scarce at £43 for Rhine. A parcel or two of the latter kind recently received from Königsberg, of mixed quality, have realized £41. We shall, doubtless, have very firm markets, with some advance in prices, between this and next June, even with the present limited demand.

CATTLE BONES.—Import about equal to that of last year, being 13,920 tons, against 13,750 tons in 1866. The price varied little during the spring, advancing from £5 7s. 6d. to £5 15s. at the close of the season. A rather slow trade followed, and from July to the end of the year £5 5s. to £5 10s. was about the value. Stocks are almost nil, our import during the last few months being very trifling.

GUANO.—The arrivals have been largely in excess of the previous year, being 15,103 tons, against 9,200 tons and 19,223 tons in 1867. This important branch of our trade is steadily increasing, and the demand keeps pace with the supply.

TAR.—The import this year from all sources amounts to 27,623 barrels, viz., from Finland and Swedish ports 23,464, and from Archangel 4,159 barrels. Prices in our market for the greater part of the year ruled low, any advance being kept in check by the ruinously low prices accepted by holders of old

stock in London left over from the large imports there during the American war—those old stocks being well nigh worked off by the months of August and September (now totally), a slight reaction took place, the prospect of short supplies also caused prices to advance steadily at least 3s. per barrel from the lowest point. The market is firm for both Stockholm and Archangel, their nearest value being 16s. to 16s. 6d. per barrel. Present stock in all hands about 8,300 barrels.

TURPENTINE SPIRITS.—In spite of large arrivals of American to London, Liverpool, and Bristol, at very low prices, our market continues to be liberally supplied with French. At the beginning of the year the latter was worth 37s.; later on such abundant supplies from America caused the price to recede to 28s., at which it has ruled with slight variations for some months, and the year closes with 28s. to 28s. 6d. as its nearest value. No direct imports of American spirits or crude turpentine of any moment have taken place. The import of spirits from foreign ports during the year is 463 tons.

ROSIN.—Our market is still well supplied with French direct from Bordeaux, the import thence during the year being about 1,290 tons. In addition, the first cargo direct from America since the war, arrived ex "Wilmington," in the month of October, and consisted of 3,620 barrels or about 450 tons. The demand being large for common qualities, they still maintain a good price, and quite out of proportion to the paler kinds. French Brui Noir is worth 7s. 6d. to 8s., Brui Clair 8s. 3d. to 8s. 9d., finest pale for soapers' use 10s. to 12s.: the value of American is about the same.

THE TIMBER trade was very languid during the spring and early summer months, and prices were depressed; but it became more active as the autumn approached, and prices for some descriptions of goods were more firm. The quantity imported is pretty nearly the same as that of the preceding year, while the stocks remaining on hand are estimated to be considerably less than at the close of the year 1866.

COALS.—The export trade this year is only 156,924 tons, against 168,764 tons in 1866 and 190,734 tons in 1865. There has not been such a sluggish demand for the best South Yorkshire steam coal for many years as in 1867: as a proof, the freights from the pits throughout the year have averaged £1 to £1 5s. per keel, of say 68 tons, less than 1866 that is by vessels on the market for sale, which has been keenly felt by

the watermen. The supply has always exceeded the demand. On inquiry as to the cause of the falling off of our exports, the great complaint is the interference of our local government. One firm alone used to export 25,000 tons of South Yorkshire steam coal, but now do not ship 2,000 tons from this port, but take up shipping in other ports for the same coal. The best hard steam coal trade is consequently driven away from this port, and nine-tenths of the exports consist of domestic or soft coal from the West-Riding district. This state of things is much to be regretted, as back freights from Hull are now very difficult indeed to be got, and ships have to leave in ballast. In the other ports on the Humber the exports are increasing where no local prejudice or annoyance is brought to bear.

SHIPPING.—Freights for sailing vessels have been generally most unremunerative during the past year. From Quebec business opened at 80s., and from Miramachi, St. John's, &c., at 70s. Even at these miserable rates very little was done, and the trade was without animation throughout the year. From the Baltic the rates were considerably under those of last season. Gefle into West Hartlepool opened at 40s. deals, Hemmossand and Hull 40s., West Hartlepool 42s. 6d., Hudikswall and Hull 45s. From Cronstadt to Hull 41s. was first paid; after which business was done at 40s., and closed at 45s. To West Hartlepool 36s. and 37s. 6d. From Wyburg 40s. to 42s. 6d., West Hartlepool 45s., and Hull 40s. 3d. Riga to Hull opened at 52s. 6d., West Hartlepool 45s. and business was afterwards done at 48s., recovering to 50s. Christiania to West Hartlepool 26s. 3d. Gothenburg to Hull 28s. From Archangel to Hull 4s. 4½d. was paid for linseed Pernau, 35s. flax. Riga to east coast 2s. 9d. oats. For steam tonnage also the demand has been flat during a great part of the year, and business was first done from Cronstadt for Hull, linseed at 2s. 6d. per qr., afterwards touching 1s. 9d., and then recovering slowly to 4s. 6d., 5s., and for two or three of the later steamers something more than the last named rate. From the Baltic grain ports business has been very dull, opening at 8s. wheat for steamer to Danzig, and there has frequently been a scarcity of cargo even at such low rates as were current. From Alexandria to Hull, direct, steamers have lately been fixed at 7s. and 7s. 6d. per qr. wheat; also from Marseilles to Hull at 26s. 3d. per ton oil-cake.

Hull, Jan. 3.

P. BRUCE.

CARR'S ANNUAL HARVEST REPORT.

ROSTOCK, Dec. 21st, 1867.—As customary at this period of the year I beg to wait upon you with my Annual Harvest Report, and trust that the same may be of interest and use in contributing to the general stock of information regarding the earth's produce this year, thereby possibly enabling you to better form an opinion upon the probable supplies of food until next harvest; the contents form a summary of information received through numerous kind and valued correspondents upon which my humble opinion as to the **PAST, PRESENT, and PROBABLE FUTURE** state of the trade has been grounded. For the information of those of my friends, with whom I may not happen to be in weekly correspondence, I beg to remind them they will find every Wednesday or Thursday a true statement of our market in, and written expressly by me for "Mr. George Dornbusch's Floating Cargoes List" (South Sea House, Threadneedle-street, London), and which paper I beg most conscientiously to recommend to the notice of those of my friends who have not as yet subscribed to it, as a better concocted nor more scrupulously conducted paper does not exist, and ought not to be wanting in the counting-house of any person connected with the grain, seed, and pulse trade.

REGARDING THE PAST.—I have great satisfaction of referring to my Annual Report of the 31st December, last year, and to my weekly market statements contained in "Mr. Dornbusch's Daily List." The opinions I there ventured to express have been most singularly realized,

and I am happy to think that those who did me the honour of following my advice and trusted their interest to my care have done well, and should I be as fortunate with my present, I shall deem myself amply repaid for the great trouble and expense entailed in procuring my information, &c.

AS TO THE PRESENT.—The year is fast drawing to a close, and at this period millers, bakers, dealers, and merchants seldom like to increase their stock to any extent, whilst farmers, owing to their having to meet their Christmas bills, bring larger quantities of their produce to market, and although from the high prices now ranging, 60 to 70 per cent. less produce need only to be sold to raise the requisite sum, yet they seem satisfied with the present rates, and many of them have been so anxious to realize, that they have cleared out their stock of wheat—this is particularly the case in the Eastern counties; this, and the foreign arrivals being in excess of present requirements, the trade is somewhat dormant, and so long as consumption can satisfy itself, and is not interfered with by speculators, there is at any time seldom or ever any very great chance of a rise; besides this, high prices dictate economy, and acts against an advance, whilst deficient crops and exhaustion of stocks keep prices steady; this is the present state of the trade, buyers maintaining their passive and very prudent attitude, taking only for their immediate wants, and, on the other hand, sellers show no anxiety to sell, preferring to land, and abide their

time rather than reduce their price. As the present extraordinary, though not by any means uncalled for, high prices were attained much earlier in the season than last year, the necessary effect has been considerably greater in stimulating the export from the grain-producing countries, and this accounts, and justly so, for the high and advancing rates of freight and scarcity of tonnage: there is at present a very considerable fleet of large-sized ships on the way from Australia, California, and Chili, and some of them overdue, and from ports east of Gibraltar to the United Kingdom, chiefly laden with wheat, are 460 against about 300 this time last year; of the latter some 50 were cargoes of spring corn, whilst those at present en route are principally wheat. The knowledge of this fact is, no doubt, also a chief reason that buyers are "lying on their oars," trusting to the old adage, "Coming events cast their shadows before;" besides this, buyers having, as already stated, got so accustomed to avoiding "operations" beyond their immediate wants, are now very difficult to persuade from this old and hitherto successful mode of dealing, and thus it may easily happen that they may be caught "napping," and prices may rise when least expected; therefore, perhaps those who have not secured their winter stock of the raw material will do well not to delay too long, bearing in mind that though there may be in all about one-and-a-half million quarters under way, this will form, with the exception of a few stragglers, the bulk of the supply of foreign wheat, up to the opening of the navigation next year—say, till April, and that they will be spread over the next two to three months.

AS TO THE PROBABLE FUTURE.—What I have stated above, applies more or less thereto. Great Britain will require foreign assistance, to the extent of $8\frac{1}{2}$ and France $2\frac{1}{2}$ million quarters; Holland, Belgium, Switzerland, Norway, Sweden, Spain, Portugal, Algiers, and Italy more or less; we will put down the wants of said countries at $1\frac{1}{2}$ millionat the outside, this makes a total of $12\frac{1}{2}$ million quarters wheat and flour. The above estimation is based on the consumption of the different importing and exporting countries, at the prices ruling at home and abroad in *average seasons*, whereas I am sure at present rates the consumption in the consuming countries is very much less; *ergo*, less will be required, and in the exporting countries also less, and thus the more will be exported, and this is the more to be expected, as the present high rates have existed previous to, and directly after the new crops coming into use, consequently economy of consumption commenced at once, and not (as it often happens) till the new crops have half gone into consumption at lower rates. I will, however, not take into consideration all this, but take it for granted that the importing countries will require what I have above stated—namely, Great Britain and Ireland $8\frac{1}{2}$, France $2\frac{1}{2}$, and the other "small fry" $1\frac{1}{2}$ —total $12\frac{1}{2}$ million quarters wheat and flour, and that the exporting countries will not be able to spare more than stated—namely, Germany two millions, Denmark 150,000, Russia three millions, the Danubian Principalities and Hungary four millions, Egypt 200,000, North American, Canada, Australia, California, and Chili, six million quarters—total 15,350,000, or, say in round numbers, fifteen million quarters of wheat and flour; *ergo*, there is no fear of starvation from this up to the next harvest, for which a good foundation has already been laid by one of the finest seed times in the consuming countries on record; and besides this, an extra breadth of land has been sown with wheat, so that the said countries are in a better position to meet a deficient harvest next year than they were last campaign, as there is hopes of having a large stock on hand at harvest time 1868; for even should the yield per acre be less, the extra breadth sown will mitigate this evil, provided always that the plants

get well through the winter, so that no land is ploughed up, and further, that the yield per acre be not too poor. Low (say average) prices are, however, not to be expected till the world at large has had two or three successive good harvests, and the consuming countries a considerable stock in store to meet emergencies at harvest time. Taking the above preliminary remarks into consideration, my humble opinion as to the probable future range of prices from now till next harvest is chiefly as follows: As the French grain markets, like the French diplomacy (I regret to say), now a-days either directly or indirectly plays "first fiddle" in the United Kingdom, and as the French, this year at least, undoubtedly are the greatest rivals of the British for the surplus of the world, and for the information, and it is to be hoped the benefit of my numerous and respected correspondents in France, it may not be amiss in the first place to consider the probable range of prices in that country and their direct and indirect influence on those of Great Britain and Ireland. The French imported last campaign about 5 million hectolitres; this year the crops are not so bad as those of last, but as there were no old stocks at harvest time, it makes it probable that an importation of eight million hectolitres, say about $2\frac{1}{2}$ million quarters wheat and flour will be required. As yet the French have consumed but moderately of their home produce; the agriculturists did not supply the markets so liberally as their colleagues in the United Kingdom, and therefore the trade imported the more, and owing to the nature of the climate, and consequent earlier harvest, the French were enabled to forestall the British in the exporting countries, and I fancy they have got three-fourths of what they require, and by spring, if the importations continue so liberal into Marseilles as they have been, it is very probable that France will export to Great Britain her surplus in the shape of flour, which will tell doubly on the British milling trade, it being a well known fact that 1,000 sacks of flour do more harm by depressing the market than 2,000 quarters of wheat. It however happens that, owing to the suspension of the surtax on foreign wheat imported into France in foreign ships, less flour may be exported, as millers will be deprived of the drawback which they obtain from the Government, and which enables them to defray the freight to England; be this as it may, the moment the French millers have collected somewhat of flour which they cannot readily sell, a reaction most probably will follow. A great deal also depends upon the nature of this winter and next spring; if the latter sets in early, then roots, vegetable, and other surrogates will more or less very speedily replace bread-stuffs; then I think a reaction will take place, if not earlier, and that the English will then follow in the wake, for so soon as the British see themselves alone in the market they will get timid and flag. So much for the probable extent and continuance of the French demand and rivalry in the grain trade. As to the probable range of prices in the United Kingdom, it cannot be denied that they have reached such a pitch as to enforce increased economy by stopping wilful waste and economising consumption, and to attract importations from wherever grain can be found. But as nature (winter) has closed the ports of those countries from whence the chief supplies are to be got, and as the stocks are very low in the United Kingdom, and it being an established fact that during the winter months consumption is greatest, I see no chance of prices receding, at least not to any extent, or for any length of time; if a momentary decline takes place, it will be on the arrival of the expected fleet, but I fancy this has already been discounted, and I have often found that the fear of what "may" happen is more than the reality. On the other hand, I fancy we shall not see prices go much higher, and that the supplies daily drop-

ping in, together with those from the British farmers, will suffice to carry the trade through the winter. Of course much will depend upon the character of the winter and the state of the growing crops. An open winter would lessen consumption and allow supplies from the Baltic to continue; whereas a severe, and above all a protracted winter would postpone the opening of the ports, and lessen the chances of a good seed-time in spring, and an early harvest in summer. It is fortunate that the rice crops are very satisfactory, and that in Ireland, where potatoes form the staple article of food, this esculent is good, as also are the oats and barley crops in general, for these cereals are greatly used in Ireland and Scotland, and no doubt also in England, either alone or mixed with wheat, &c. My Berlin friends write me that barley and oatmeal are being freely mixed with rye and wheat flour for bread. I repeat, the farmers have the rein and whip in hand till spring, but as they are satisfied I cannot blame them for being so, and taking advantage of present rates. I think the trade is in a healthy sound state, and likely to continue so up to the end of May, or early in June, when much will depend in the first place how the plants have got through the winter, and the spring seed sown, and then in June will come the critical period "blooming time," and last though not least the state of the weather at harvest time. So much, however, is certain that genuine red and good-conditioned useful Baltic wheats, owing to their excessive scarcity, will fetch a comparatively higher value, it being now ascertained that the American and a vast deal of other kinds of wheat don't work well, and that the bakers are now complaining as to the poor properties of the flour made from such wheat, and that of late the millers, particularly the Scotch millers, have become somewhat more alive to the importance of securing in time some good wheats, particularly some Mecklenburg, and other Lower Baltic wheats, upon which they can rely being genuine, that is not mixed with Hungarian and other hard and buff-coloured qualities. To cut a long story short, were I a miller, dealer, or speculator, I would avail myself of the first favourable opportunity to secure my winter stock—would during the winter or in March, secure what I comfortably might require till end of May or early in June, and then see how matters stand in point of probable supplies, stocks, and how the young plants look, should the crops promise badly, particularly in point of quality; then I would see to get in as cheaply as possible, so as to be supplied with old wheat to meet emergencies, or in case of the quality of the coming crop being damp, and requiring a large admixture of old, the sooner you get the pick of the market the better. England may not be always so fortunate in housing her crops in such good condition as this year, for which the farmers and trade in general cannot be too thankful, as a wet and deficient harvest would have been a national calamity. Should prospects be good in June and July, I won't be surprised to see prices of Black Sea, Hungarian, American wheats down 8s. to 10s. per qr. below their present value; whereas the finer qualities, such as unadulterated Baltic red and white, will always find buyers at considerably better rates than the qualities above alluded to for mixing purposes.

THOMAS CARR.

ENGLAND.—Not so much wheat planted last fall owing to the lateness of the season, and a good deal was left till spring, and spring wheat is always a precarious article; and in the north of England a great deal of land was laid down under pastures and green crops. What wheat was sown, got into the ground pretty well. The weather was very changeable during December and January, from severe frost to warmth, which did harm to the plant. The weather was rather unfavourable for spring sowing, the oats and early sown barley were got in well, but rain came and continued, and a good deal of barley

was got in rather badly and late (March was one of the most inclement months experienced in the United Kingdom for many years past, remarkable for its protracted wintery character; its predecessor (February) was a wet month); hence this crop varies accordingly; a wet and inclement March is generally followed by a deficient wheat crop. Wheat got through last winter very well; the early sown looked favourable up to the middle of March, the winter being particularly severe; the cold checked the too rapid development, clearing the fields of slugs, wireworm, and other vermin, which had done much mischief ere then, at the same time the copious fall of snow protecting and nourishing the plant; eight days later, however, the weather changed for the worse; frost and rain, sharp winds prevailing, doing harm by nipping the wheat, which lost its healthy colour, and making all heavy soils quite unfit for working satisfactorily, some districts being actually under water. Early in April the weather changed most favourably, and farmers got ahead with their still backward work. A large area of land, intended for spring wheat, beans, and peas, was applied to barley and oats; about this time (early in April), the wheat plant recovered somewhat from its sickly appearance. The blooming time was, in its early stage, generally speaking, fine, though in some districts it was marred by severe night frosts towards the end and just as the ear began to fill, therefore the "setting" was defective. At the end of June and beginning of July scorching hot weather set in, accompanied with tremendous thunderstorms and deluges of rain, which were general throughout the country, and the straw being weak at the root (or as Mr. Mechi would call "root-rotting"), from the wet March, &c., and the small amount of sunshine later on, a great deal of the crop of all kinds was laid; this is, no doubt, one of the causes of the deficiency of the yield, and of the mildew, and blighted, and shrivelled character of some of the grain, so that many fields which promised 40 bushels to the acre only yield 28, and in some instances as little as 20. Hardly has ever been remembered such a fine time for securing the crops in England. In many places they were got in with scarcely a shower; this was the more important, as much of the crops being laid, rain would have been most destructive to them. The harvest was later by two or three weeks. The wheat crop is generally deficient in quantity, farmers being much disappointed in thrashing it out, except upon some of the light lands, which will bear almost any quantity of rain, and there the yield is above an average. It is impossible to tell what is the exact amount of deficiency on the whole, and opinions naturally vary from 10 to 20 per cent. It is in a summer like the last that the difference between well-drained and well-farmed land, and land that is not well drained and farmed, is most apparent. The last spring was, as already stated, particularly cold, wet, and protracted, consequently there was generally plenty of straw, and this led the farmers at first to fancy they had a good crop of wheat; further, the wet spring favoured the growth of weeds on heavy land, such on some farms getting the better of the wheat. Wheat is generally good in colour but deficient in strength; thus in most districts the millers are compelled to buy foreign wheat to mix with it, whereas in the other districts millers (particularly in London) say it grinds well. The weight is rather light, say on an average about 60lbs. or 61lbs. per bushel. The condition of all kinds of grain is first-rate. Barley various in quality (some fine and some bad coloured, and more or less coarse), and about an average yield; but if the weight of the grain is taken into account, this crop will be found deficient, so as to bring the actual produce considerably below an average; there is an average quantity of straw, and above an average breadth was sown, but it suffered from drought in June. Oats, large breadth was sown: they are thin and light in quality, but a full average yield. Beans in some places a failure from black fly at time of blooming—in other places a good crop, but generally speaking, under an average in quantity, and vary in quality. Peas very deficient. This hay crop very large and good—not been such a crop for many years, there was so much moisture in spring and fine weather for securing it. Turnips good crop. Potatoes fair crop as to quantity, though there are complaints in some places, and also of their being attacked more or less by disease, particularly in the Yorkshire and London districts.

SCOTLAND.—There was about the usual average under wheat, barley, oats, peas, and beans. Autumn wheat was never put into the soil under better auspices, but the summer was cold

and wet, and the yield per acre 20 to 30 per cent. short of an average crop; the weather being wet at blooming time caused much rust, the ears looked well, but on being rubbed out, are found to be filled, and a great number of light shrivelled pickles appear. The straw is bulky enough in the stack-yards, but the yield of flour and meal is not in accordance thereto. Quality and condition fair average, weight about 62lbs. per bushel. From the middle of April, the weather throughout the season up to harvest was ungenial for all cereals: had it not been for the sunshine on the eve of harvest, and the unprecedently quick manner in which the cutting and housing of the crops were conducted, wheat would have been a decided failure. Beans, peas, barley, and oats got well in. Potatoes planted under rather unfavourable circumstances, are small in size, and about one-third of an average, and more than one-fourth of them diseased. Barley about 20 per cent., beans, peas, oats about 12 per cent. below an average, condition and quality fair; the barley being dry, generally malts satisfactorily. Turnips, mangolds poor crops, Swedes somewhat better. Hay best crop of the season, and considerably above average in quantity, and about an average in quality.

IRELAND.—Less land sown with wheat and oats, representing a reduced production of 2 to 300,000 qrs. of each. Sowing of wheat was interrupted last autumn by broken weather. In spring, weather somewhat more favourable. Autumn-sown set through the winter tolerably well. Early blooming time favourable, towards the close unfavourable. The weather at harvest-time unfavourable. Wheat under average quantity owing to the devastating rains and winds in July and August. Quality, weight varies greatly, condition pretty good. Hay large crop and well secured. Potatoes worst crop we have had for many years; they were late planted, and were attacked by blight at an early stage, which stopped the growth, and the result is that the quantity available for human food is at least one-third short of last year. Oats full an average yield per acre, and in quality. Barley larger breadth sown, owing to less fax, wheat, and oats; yield therefore full average. Rye about an average.

FRANCE.—Usual breadth sown last autumn with wheat under favourable circumstances. Got well through the winter. Spring was unfavourable, owing to the wet, ungenial weather in March, which interrupted the sowing, indeed in many cases suspended it altogether. Oats, in particular, were sown under very unfavourable auspices; at the same time the wheat plant began to assume a yellow sickly tinge, weeds sprung up, and signs thinned the plant in many districts. April was an unsettled month, but on the whole not very unfavourable for the sowing crops, particularly during the last eight or ten days, and the plants regained their healthy green appearance, and no serious complaints were put forth; but May was an inclement month, except in the early part thereof, the incessant rain, together with day and particularly night frosts, did great injury, particularly to the rye crop, causing rust in the blades and "foot rotting;" fortunately it cleared up when the wheat was setting into ear, that is towards the end of the month. Blooming time went off satisfactorily, with few exceptions; some departments suffered from torrents of rain, which laid and broke the halm. In the major part of the departments of the Empire the crops were housed in good condition; the fine weather in August did them good in point of quality and condition, greatly retrieving the harm done by the rain and strong winds, and cold atmosphere in June and July. The harvest has been a late and protracted one, and the yield does not come up to the bulkiness of the straw in the stack yards. Wheat, barley, and beans, about an ordinary average in quantity and colour; average weight of wheat 60lbs., barley 51 to 52lbs. per imperial bushel. Rye, three-fourths of an average. Oats, very poor yield, say half an average. Hay and potatoes, large crop, of good quality. Potatoes are being sold to England. Turnips not grown in quantity.

HOLLAND.—In the autumn, 1866, a somewhat larger breadth of land was sown with grain, owing to a great quantity of land, hitherto laid down in meadows, being ploughed-up and put under grain, in consequence of the cattle disease. In the spring of this year a large breadth of land, planted last fall with rapeseed, particularly in Groningen and Friesland, having been ploughed over and resown with barley and oats, there has been more of these cereals sown than usual. Seed-time, last autumn, was very unfavourable, owing to continued rain; and spring-sowing did not go off very much better. The wet pro-

tracted autumn gave cause for many complaints; but, on the whole, the plants got pretty well through the winter, and recovered to a great extent; the blooming time, however, became very unfavourable, and this may be the cause of the very deficient yield in wheat, rye, and rape-seed: wheat being only two-thirds, rye one-half, oats and barley a full average yield. Quality and colour in general tolerably good, but light in weight. Buck-wheat, potatoes, and hay very good crops, being much better than last year.

BELGIUM.—Wheat, rye, and barley have yielded badly in quantity and quality, in consequence of the frost which took place in May and June, and the wet abnormal summer. The usual breadth of land was sown last fall and this spring with the above cereals. Weight of wheat, 60lbs. to 62½ lbs. Rye, 56 lbs. to 58 lbs. Barley, light; viz., 48 lbs. to 49½ lbs. Oats, good yield in every respect, weight, 37 lbs. per imperial bushel. Potatoes, a middling crop. Hay, abundant crop. Beans, peas, and turnips are not much grown.

SWITZERLAND.—Deficient crops, and larger quantities as usual are being imported and contracted for from Germany particularly from the Austrian provinces, per rail.

GERMANY.—About the usual breadth of land sown with grain, pulse, and vegetables. The crops in general suffered, as in other parts of Europe, from abnormal weather—namely, a protracted changeable winter, a late and wet spring, night frosts in May, cold and continuing heavy rains in June and July, causing in many districts disastrous inundations; also mildew and rust is more or less prevalent. **AUSTRIA.**—Excellent harvest, particularly of wheat; maize has, however, turned out a short crop. **BOHEMIA** and **MORAVIA.**—Crops full average; fine quality and weight. **GALICIA.**—Excessive rain in July did a vast of harm to the crops, spoiling a very large portion thereof; thus the yield is very much below an average, particularly in the eastern sections great deficiency exists, so that this province of Austria is the only one that will have little or nothing for exportation this year. **BAVARIAN** crops not come fully up to expectation. The autumn-sown stood well in spring, but the month of May being cold did harm to the early blooming. In the **PRALZ** and **LOWER BAVARIA** wheat yielded better; tares, beans, and peas yield well; barley good; rye tolerably good. **SAXONY.**—Crops very satisfactory. **BERLIN** DISTRICTS not at all satisfactory. **TILSIT** and **MEMEL** DISTRICTS.—Crops suffered much in August from rain and wind. Rye is very poor and shrivelled, weight being only 53 to 54 lbs. Wheat is somewhat fuller and better in corn than rye; barley and oats tolerably satisfactory; peas middling. **KONIGSBERG** DISTRICTS.—Seeds put into the soil in autumn 1866, and spring 1867, under favourable auspices, and a full breadth sown. The plants looked well in spring, having got well through the winter, but suffered from frost later on, and also from unfavourable weather during the blooming and harvest-time. Wheat not half an average, and throughout unsatisfactory, much being not fit for flour. Rust and smut are prevalent to a great extent; weight 58lbs., but many parcels only weighing 52 to 53 lbs. Rye about half an average yield; quality and colour variable; weight 54 to 55 lbs., but many parcels weighing 51 to 52 lbs. Barley and oats nearly an average yield; quality variable. Peas middling; farmers were often obliged to cut them green, in order to prepare the soil for the sowing of rye. Potatoes unsatisfactory. Hay yield very moderate, the harvest having been spoiled, and in the lower districts washed away, owing to the heavy and incessant rains. **DANZIG** DISTRICTS.—In many parts autumn seed was well put into the ground, in others (and those were the greater number) it was but badly effected, owing to the wet weather; indeed in some parts it could not be done at all. The first-sown autumn seed appeared well above ground, but the later sown suffered from dearth at first, and this got worse through the winter. Spring sowing went off somewhat better, though late, owing to the protracted winter, and rain. The usual breadth of land was sown with spring corn. Frost in May, particularly at night, did great harm, and then again the wet weather at blooming time and harvest time; and many of the landowners did not think it worth while to thrash their wheat. There are districts in the interior from whence few complaints are heard; but, on the other hand, there are others, for instance East Prussia, where all but a total failure has taken place. Wheat two-thirds of an average yield, variable quality, finest weighing 63 to 64 lbs., but some large quantity, very light poor quality, weighing

53 lbs.; but the chief crop consists of middle quality, weighing 58 to 60 lbs. Rye (very poor yield) suffered during the blooming; weight 54 lbs. Barley and oats somewhat below an average. Peas about an average. Potatoes half a crop, quality good. Hay yielded deficient, but quality leaves very much to be wished for. The low situated districts lost their hay from floods, others had to leave it to rot, or it lay, as they could not get it carried for similar reasons. POSEN AND PROVINCE, POLAND DISTRICTS.—Both in Upper and Lower Poland crops of wheat very unsatisfactory in quantity, and quality various, the Polish wheat having partly small pickles; at the same time there are some fine heavy white wheats. Rye also bad, but still much better than wheat, particularly the early-sown. Barley yield tolerably good, though it suffered from hail. Oats and buckwheat middling. Peas a full average; good quality. In Posen crops turned out better on the whole. SILESIA DISTRICTS.—Usual breadth sown. Autumn seedling favourable, but the dearth prevented it from germinating. Spring sowing late, and got slowly through. Blooming time suffered from cold weather to a moderate extent. Yield on light soils good, and moderate on heavy. The yield of cereals in general 85 to 95 per cent. of an average; the quality, colour, condition, weight, &c., are on the whole better than usual. Hay full average; clover and cloverseed very abundant. Turnips moderate, and potatoes 25 per cent. below an average, taking quantity and quality into consideration. STETTIN DISTRICTS.—Usual breadth of land sown with cereals. Autumn, 1867, unfavourable, also spring this year not good; low situated fields were later: this will to a certain extent account for the lightness of weight and bad colour. On the high situated fields the plant got well through the winter, but on the lowly-situated soils they suffered from wet. Blooming time the plants, with the exception of barley, stood apparently luxuriant, and the prospects for a good crop were very satisfactory, though apparently the rye must have suffered previously from frost, and then the rain which set in during the blooming must have been damaging to it. A deal of rust and mildew is prevalent, and light corn is the consequence in rye. Wheat is not so much affected as rye. Uckermark and Oderbruch wheat is not so fine, and heavy as usual. For reasons stated the crops have not by far come up to expectation, and considerably below last year's—say wheat 15 per cent. below average, variable in quality, but generally good; condition middling, generally good; weight 60 to 63 lbs. Rye 25 per cent. below average; indifferent quality and condition, middling colour, weight 57 lbs. Barley moderate average, indifferent and various in quality and condition, weight 50 to 52 lbs. Oats full average, good quality and condition, weight 36 lbs. Peas 10 to 20 per cent. above average, good quality, condition, and colour. Potatoes 25 to 30 per cent. below average yield, quality variable, generally good. Hay moderate average; first cutting nearly lost, but the second turned out a satisfactory and bulky crop. VOR POMERANIA (ANCLAM, WOLGAST, GRIEFSWALD, DEMMIN, STRALSUND, and BARTIN) DISTRICTS.—Usual breadth sown with wheat, rye and barley, but more of oats and tares. Last autumn sowing was completed under tolerably favourable auspices; this spring, on good dry well-drained soil, sowing was pretty well managed; but in the low situated, heavy soils, the sowing was very unfavourable. Owing to the protracted winter, late and wet spring, sowing was extraordinarily late on this account; the grain was late in ripening, and developed itself slowly, owing to the continued cold atmosphere. Autumn sowing got well through the protracted winter until March, but suffered from a late and wet spring, besides the night-frosts in May; and the continued rain in June and July were disastrous to the crop, causing mildew and rust, particularly in the Stralsund district. Many estate-holders will not have enough for home use, and rye, as well as barley, has been and is still (particularly the former) being imported. It was fortunate that during the harvesting the weather was dry, and this accounts for the condition of all kinds of grain, with few exceptions, being good. Wheat two thirds of an average, various (for reasons above-stated) in quality and colour; average weight 60 to 61 lbs. Rye one-third to one-half of an average; poor quality; weight 54 to 55 lbs. Barley two-thirds of an average yield; quality and colour various; weight 50 to 51 lbs. Oats good average yield; good quality and colour; weight 36 to 37 lbs., except in the Stralsund district, where the yield is one-fourth to one-third short of an average, and middling quality. The same

may be said of peas. Potatoes considerably under average yield; quality tolerably good. Hay and clover first cut satisfactorily, second cut not so; quality only middling. ROSTOCK AND WISMAR (MECKLENBURG SCHWERIN) DISTRICTS.—About the usual average sown with wheat, rye, and barley, but less of peas, potatoes, mangolds, and turnips, but more of hay and oats. Last autumn and this spring tolerably good seedtime, and the autumn-sown got well through the protracted winter and spring. The frost at nights in May impeded the growth, the plants being thin and backward, particularly so in the Rostock district. In the Wismar sections the young plants stood up to blooming time good; later on the crops suffered in both districts from the cold, stormy weather, and some thirty-six different estates in the Rostock section suffered severely from hailstorms. The weather being fine at harvest time, condition, colour, and weight are very good. Wheat three-fourths of a good average yield; quality various, some thin meagre pickles, owing to mildew and smut; but on the whole the quality may be called good useful; weight 61 to 62 lbs. Rye three-fourths of an average yield, quality various; weight 55 lbs. Barley seven-eighths of an average, quality various; weight 57 to 58 lbs. Oats full average, quality middling; weight 36 to 38 lbs. Peas considerably below an average yield; moderate quality, very much worm-eaten and small. Potatoes three-fourths of an average yield; quality middling. Hay in quantity a bulky crop, but a large portion is entirely spoiled, and an equally large portion extensively damaged. Turnips and mangolds 20 to 30 per cent. under average. Beans, few grown in Mecklenburg. Rape and Ruben dissatisfactory, particularly in quality. LÜBCK AND LAUBENBURG DISTRICTS: Rye was well housed, but yield very middling, and many fields only yielded one-third of an average. Wheat and oats somewhat better. Potatoes nearly half diseased. Hay, good yield, but quality bad owing to the wet weather. HAMBURG and the ELBE DISTRICTS: As far south as Saxony usual breadths sown with cereals. Wheat carried in good condition, but the pickles are much shrivelled from blight and mildew, and fine plump sorts are scarce. Yield very disappointing in quality, and 15 to 20 per cent. below an average in quantity, otherwise sound and useful; weight 60 to 61 lbs. Barley good average, and chiefly consists of fine mellow colour and malts well, particularly that grown in the Saal districts. North of the Elbe, quality worse and much discoloured, although sound; weight 51 to 53 lbs. Beans, quantity about an average, but quality poor, and generally will not be fit for shipping without being kiln-dried. Peas and tares very moderate crop, but quality good. Rye is very poor crop, much worse than wheat. Potatoes small crop, but sound. Hay large, quality and condition good. Oats full average, quality good, weight 39 to 40 lbs. MARKS: Wheat, very bad crop, more of poor than fine quality, and little is brought to market. Rye is a poor produce, light weight and poor quality. Oats and hay good. HOLSTEIN and SCHLESWIG DISTRICTS: Usual breadth sown. Rye and wheat got in well last fall, but the summer corn was very late sown this spring, and, in many places, under most unfavourable auspices. Up to March the autumn-sown grain looked well, but in April, and especially in May, rye suffered severely, and, no doubt, this is the cause of the poor yield. Rye bloomed in general good, but wheat bloomed during ungenial cold weather, and the frequent rains later on caused many complaints as to the plant being "root-rotten." Wheat 83 per cent. of an average, quality various, weight 61 to 62 lbs. on the average. Rye small yield, say 70 per cent. of an average; quality meagre and light; 54 to 60 lbs. Barley, good crop; quality various, some thin and others plump; condition not satisfactory everywhere, owing to the rain, which also affected the colour; weight 52 to 53 lbs. Oats, satisfactory crop in quantity and quality; colour bad; weight 38 to 40 lbs. Beans only grown for home use; the same may be said of turnips. Potatoes very small crop, but tolerably free from disease. Peas, those which were housed before the rain set in are satisfactory, those secured later were housed in damp condition. Hay abundant, clover also a bulky crop; but a deal was housed during the wet, consequently in bad condition. BREMEN DISTRICTS: Weather abnormal since the middle of last year, wet being prevalent, frostless winter and cold summer; the harvest this year in this district is also abnormal. Usual breadth sown in autumn 1866, seed time tolerably good; but the plants suffered so much from the heavy rain in winter, and

inundations in spring on heavy and low situated soil, that nearly all the rapeseed and a deal of wheat and rye had to be ploughed up in the spring, namely, in the Upper Weser, in the Hildesheim and Brunswick districts, which latter suffered also from rust and smut; and the soil so ploughed up, was resown mostly with oats, consequently an unusually large quantity of this cereal was sown. The unploughed-up sown autumn corn grew ahead in spring most luxuriantly; but the sharp night frosts in May did harm to the rye. Blooming time went off in a normal state, and the prospects for the crops were mostly, close upon harvest, very much praised, so much so that, on thrashing, the actual yield turned out considerably behind expectation. The rye crop in the whole district between the Elbe and the Rhine and the whole provinces of Hanover were dissatisfactory, being one-half to two-thirds of an average yield; quality mostly poor and light in weight; the amount of straw is satisfactory. Wheat promised, close up to the harvest, an abundant crop and fair quality, but it suffered so much from mildew and rust that the result has turned out not much better than the rye; quality various. Barley, a moderate average in quantity and quality. Oats: The Upper Weser, Hildesheim, and Brunswick districts are enormous yield, of fine quality and heavy weight; but in the immediate neighbourhood and on the coast the crop is in quantity and quality unsatisfactory, but abundant in straw. Peas tolerably good, but few are grown in this district. Beans, good yield, but condition damp. Potatoes on the coast in consequence of wet are a failure, but on the sandy districts the yield is good; the same may be said of turnips and hay. EMDEN and LEEZ (HANOVER) DISTRICTS: Usual breadth sown in autumn 1866 under pretty favourable conditions. The autumn seed not tolerably well through the winter, although in some few parts it suffered from inundations. During the blooming time the young plants, with the exception of oats and beans, stood thin on the ground, having been too sparingly sown. Wheat, three-quarters of an average, poor quality, the pickles being imperfect; colour greyish; weight 55 to 58 lbs. Rye, half a crop, inferior quality; weight 55 to 57 lbs. Oats, full average, good colour, light weight, 32 to 33 lbs. Beans (much straw and few pods), about half a crop, weight 55 to 63 lbs., good quality. Rapeseed, one-eighth of a crop, quality good. RHINE DISTRICTS: Yield less than last year, owing to heavy rain; wheat more or less infected with smut and rust, which has lessened the yield and deteriorated the quality, except rye, which is somewhat better than expected. Potatoes, full crop, but the late kinds show symptoms of disease. Oats, good crop.

DENMARK.—Usual breadth of land sown. Seed time in autumn 1866, and spring 1867, pretty good. The plants suffered somewhat in winter from the inclement weather. Blooming time also not favourable, nor was the weather up to harvesting, when it however changed for the better, and the crops were at last pretty well housed. Wheat, large yield of straw, but 15 to 30 per cent. short of an average in corn; quality not fine, being greatly mixed with shrivelled pickles; weight 60 to 61 lbs. Barley rather dark in colour, in comparison to average seasons; weight 53 to 54 lbs.; yield about an average, quality variable. Rye, worse crop than wheat in every respect. Oats, good yield and quality; 40 to 41 lbs. Peas, tares, and beans, small crop. Potatoes, very poor crop. Turnips also, though somewhat better than potatoes. Hay, bulky crop, but very poor quality, owing to the frequent and copious rains.

NORWAY.—Crops very unsatisfactory, the early frost and snow played sad havoc with them. Wheat, a failure; rye oats, and potatoes next to it. Barley is the best crop, being, in point of quantity tolerably satisfactory, but quality very middling.

SWEDEN.—In consequence of the incessant rainy weather and protracted winter in the northern sections, nothing but rye could be sown last fall, and in spring a good deal of this had to be ploughed up and resown with summer corn; and what rye remained unploughed up thrived badly, owing to the cold waterlike weather. The central and southern sections have fared best, the crops being not very much short of a moderate average.

RUSSIA.—Rather more than the usual breadth of land sown with cereals and the seed got well in last autumn, but not so satisfactory this spring, it being too dry, and continued so wet into July, when heavy rains set in, doing great harm to the

quality, and thus reducing the quantity. Early blooming time went off tolerably good; but then excessive heat set in and continued doing damage to the crops in the Odessa, Cherron, and Astrachan Governments; the latter suffered severely from locusts. Wheat very short yield; quality, weight (particularly the Ghirka), colour, and condition good. Hay crop totally lost. Potatoes and turnips good, but dear. Rye crop decidedly very deficient. Barley small yield, and generally light in weight. Oat crop very middling. In the Taurida Government the crops are better than in any other in Russia, not having suffered so much from drought. In Bessarabia the plants suffered severely from drought, and crops poor, very deficient indeed. In the Surator Government, from whence the bulk of the Saxonska wheat is produced, the heavy rains did much mischief by laying the wheat. Azof districts, particularly Taganrog, the usual breadth of land sown with wheat, barley, oats, rye, beans, and peas, and got satisfactorily into the soil. Up to the month of May the growing crops promised to be much worse than same time 1866, in consequence of want of rain; but after then rain fell copiously; blooming time went off well, and the result is that the present yield far exceeds that of 1866; quality satisfactory, particularly the soft kind of wheat (Ghirka), excellent quality, weight 61 lbs.; condition also excellent, hard wheat 63 lbs., colour of those kinds not satisfactory, beautiful colour being scarce. Hay poor crop, but potatoes and turnips are good, although few were planted. Stocks very light; supplies have diminished greatly and will soon cease altogether, and they will only increase early next year; in the interior a large quantity of grain exists. Russian Poland, particularly the Governments of Podolia and Volhynia, suffered much from floods, and thus the crops are very unfavourable; indeed, in some districts scarcely the corn sown has been reaped; also hay and other cattle food have throughout not yielded well, and what little here and there has been reaped is of inferior quality. In the Kiew districts, crops not much better than those of Podolia Volhynia. North Russia had a disastrous, protracted harvest, a deal of potatoes, peas, and summer corn being still in the field end of October; frost and rain did irreparable damage, particularly in those districts north of St. Petersburg, so that that district has to supply not only Holland, Belgium, Bremen, Hamburg, Lübeck, Holstein, Königsberg, Stettin, Denmark, Norway, Sweden, and Finland, but also Perna, Libau, and even, more or less, Riga and Archangel, which two latter ports (particularly the last-named) usually export to some extent. In Courland the rye crop is better than in Lithuania, where it was sown late; summer corn and hay are tolerably good. In Finland, in one-half of the country, the crops may suffice till early in the summer; in the other half, next to nothing grown; the early and severe frosts in August nipped the potatoes, peas, and beans, and also summer corn. The crops for the last ten years, having been all but nil, have impoverished the country, and the requisite credit or means to buy food difficult to be got.

TURKEY, MOLDAVIA, WALLACHIA, and HUNGARY DISTRICTS.—TURKEY.—The crops are very bad, except in those provinces bordering on the Danube, indeed so much so that the Government has prohibited the export of grain from the province of Albania via Scutari, from the 28th November. MOLDAVIA and WALLACHIA.—The last year's autumn-sown seed in Moldavia, and in the lower part of Wallachia, perished nearly altogether, as the winter, though not very cold, was almost throughout snowless; the warm weather caused the seed to germinate quickly, and the perishing cold atmosphere which immediately followed destroyed the germs for want of snow to protect them. During two successive years the harvest has been bad—say in 1865 and 1866. During this spring a very large breadth was sown, considerably more than the usual breadth (land enough exists everywhere, but not cultivated owing to the want of hands). The soil planted in autumn 1866, and ploughed up again, was resown, and nearly throughout, with wheat and maize; but rye, also barley, less than usual and that almost exclusively in Wallachia Minor, where, as in the whole of Wallachia, much rapeseed was sown, which seed only used to grow "wildly" amongst the barley, and for this reason formerly more barley was sown in order to obtain the rapeseed, the price of which being proportionately high. A severe drought set in after blooming time, and put an end to the hitherto good prospects for a good harvest, the plants having till after blooming time promised well. It rained only

in Wallachia Minor, the corn-chamber, and most productive parts in the Danubian Principalities; later on it rained, however, in the neighbourhood of Giurgovo and in the higher situated parts of Moldavia. In the vicinity of Galatz, also near Takschow, and nearly in the greater part of Moldavia, the rain came too late, and the wheat crop yielded badly in point of quantity and quality, and the maize crop middling (the latter is brought only to market in the month of May), whereas the wheat and maize crop in Minor and Upper Wallachia is an extremely abundant one, and quality excellent; also the rapeseed sown is of excellent quality, and abundant yield. Rye and barley less grown, but quality excellent. None of this wheat weighs less than 60lbs., indeed most of it weighing 63 to 64lbs. per bushel; in fact all kinds of grain are good-conditioned, heavy, and of fine colour. The harvest is so abundant, that, should a failure take place next year, it will not matter much, it being this season nearly impossible to get through the quantity grown, in spite of the many thrashing-machines lately introduced. It is a great drawback that just this season sufficient means of transport are wanting, as at the various shipping places along the Upper Danube the grain is heaped up on the shore, in the open air, for want of warehouses to put it into, and for want of vessels to ship it. Kajika of about 1,400 quarters make a freight of 750,800 Turkish lire from Turn-Sewerin and Turn-Magurell to Galatz, which is more than the average freight from Galatz to Great Britain. A "remarqueur," which takes up five empty barges to Galatz, leaves in six to seven days for 650 Turkish lire. Hay not abundant; this article is not particularly cultivated, but left mostly to nature to produce it in the uncultivated valleys. Turnips only red quality are cultivated, and those only in gardens, the cultivation of which is in the hands of the Bulgarians and Lijovanians—a sect of Russian emigrants. Potatoes are also only grown in the vicinity of large towns, not being much consumed as food by the people. Beans (otherwise an article of export to a limited extent) is this year a failure. HUNGARY has had, in point of quantity, with the exception of maize, an extraordinarily bountiful harvest, particularly of wheat, but various in quality, and some samples contain a good deal of smut, owing to the rain during harvest; good in the Banat and Stuhlweissenburg, and part of the Theis districts; whereas the Upper Theis districts, and the Basika, the weight is four to five pounds lighter. In other districts the weight is inferior again, and lighter by two pounds, so that on the average 60½lbs. per bushel; colour various, mostly grey and dull-looking. There is some fine bright grain, but it is also hard. Rye is good in both quantity and quality; weight 57 to 58lbs. Oats an average, but light; weight 33 to 34lbs. Maize a deficient crop; suffered from dearth. Barley good yield, and contains more malting qualities than last year.

SPAIN AND MEDITERRANEAN DISTRICTS.—**SPAIN:** Wheat the best crop of the season, and even it is deficient about 25 per cent.; quality fine; barley poor crop. In the CASTILES harvest also deficient, but not to such an extent as the other provinces. The crops in general suffered from dearth and excessive heat early in summer. **PORTUGAL:** The crops are even worse than in Spain; the Southern districts suffered most. **ITALY:** In Tuscany yield is generally much short of an average. Lombardy and the provinces of Upper Italy scarcely moderate average. In the Island Sardinia the yield at Cagliari is deficient, having suffered from a heavy swarm of locusts in the middle of June; in other parts of the island the crops are said to be tolerably good. In SICILY crops are unfavourable, owing to the protracted dearth in early summer. **ALGIER DISTRICTS:** Crops suffered severely from locusts, but more so from dearth and excessive heat; they may be called a failure, and it will require large assistance to bring the population through. Barley, the chief article of consumption, will have to be imported to a considerable extent; many say to the extent of one-and-a-half million quarters.

EGYPT.—Crops have turned out pretty satisfactory.

AMERICA.—The breadth of land sown with grain is about 10 to 15 per cent. larger than last year, namely, in the most of the States fully as much winter and considerably more of spring wheat, but not under the best auspices, the weather being unfavourable last fall and this spring. Some of the sections suffered from midge, but there have been few or no complaints as to injury from "chinch bug," and from rust only in some few sections. Barley, rye, oats, and buckwheat full average acreage sown, particularly of the latter. The heavy

rain in May and June, followed by intense and protracted heat, did harm, particularly the maize crop suffered from the drought; it dwarfed the plant and prevented heading. Again the badish weather at harvest time in some districts injured the crops, but on the whole they were housed in excellent condition; the quality is also pretty good; the weight is here and there light, owing to shrivelled pickles. On thrashing it is found that the yield per acre does not altogether turn out so favourable as was at one time expected, though against last year the yield is 30 to 35 per cent. larger on the average. In the Southern States the yield is larger than for several years past, but still not sufficient for home use, although the inhabitants since the peace are gradually getting the land again into cultivation and sown with wheat. The yield of rye 4 per cent. more, barley 4 per cent. less, and oats 3 per cent. more than last year, although oats suffered severely in some sections from ungenial weather. Buckwheat good crop. Potatoes in the potato-growing districts considerably less than last year, having suffered from disease. Maize with few exceptions a good yield. **CANADA:** Winter wheat secured, on the whole, in fine condition, and the spring wheat crop, which is one of the largest grown of late years, similarly so. Maize, barley, oats, and rye satisfactory crops. Quality and condition of the crops fine, and earlier by two weeks, this applies to Upper as well as Lower Canada. **AUSTRALIA:** Crops fully as good as last year's in every respect, and indeed in most cases considerably better. **CALIFORNIA AND OREGON** about equal to the abundant yield of the crop of last year, quality good, being clean and plump, weight fully 60lbs. of wheat; barley and oats, particularly barley, are deficient. Maize having been more largely planted, is fully better than last year. **CHILE:** Crops satisfactory and equally as large and good as last year. The same is reported from **AUSTRALIA**.

SEED-TIME.

GREAT BRITAIN AND IRELAND.—Owing to the high prices very large breadth sown, and under extraordinary favourable auspices, and the young plants are looking healthy. The same applies to **FRANCE.** **HOLLAND.**—The usual breadth sown with wheat, rye, and winter-barley under favourable auspices. Should the rapeseed plant get well through the winter, there will be less than usual of spring corn sown; however, it mostly happens that more or less perished seed is ploughed-up during the spring, and resown with grain; the same remark more or less applies to **BELGIUM.** As to **GERMANY,** the Konigsburg districts, not near usual breadth sown, and not under favourable circumstances, and promises unsatisfactory. Dantzic districts, first sown got well into the ground, but has since suffered from rain; the latest sown is somewhat better, but progresses slowly. **STETTIN** districts considerably better: in Silesia for instance, excellent. In Vor-Pomerania seed-time late, owing to protracted harvest and wet; and put into the ground not under good auspices. **MECKLENBURG.**—Better, though late, and not altogether under very favourable auspices. Bremen good. **HANOVERIA.**—Poor seed-time, owing to the rainy weather, and a good deal of land not sown; what did get put into the ground stands tolerably well, rapeseed excepted, which stands middling. **Holstein and Schleswig:** Late and unfavourable seed-time. **DENMARK, NORWAY, and SWEDEN.**—Not good. **RUSSIA.**—On the whole tolerably satisfactory. **DANUBIAN PRINCIPALITIES.**—Excellent: not too much nor too little rain has fallen. Such is the peculiar condition of the soil that a few days' dry weather, with dry winds, makes the soil quite as firm as a stone, and the crust to burst; on the other hand, four or five days' rain makes the soil and roads bottomless, and no plough can work on the fields. Large breadth of land sown with wheat. **AMERICA.**—Prospects for the coming crops not good. Autumn-sown wheat in the west is said to have suffered from extreme dearth, retarding the growth, and in some of the States the bug and worm have destroyed the plant completely, and there is reason to fear that a large area of the country has suffered in this way. This is truly a great misfortune, and should it prove to be wide spread, it will prove a great national calamity; but we trust we shall not have a failure in the winter seed. In **CALIFORNIA** and **ONEGA** very large breadth sown, and it is expected that at least the coming crops, which so far look well, will yield twenty million bushels, and 60 per cent. larger than last year, and a proportionate increase in barley.

PRICES.

DANTZIC, 21st December.—Sharp frost, with snow at intervals. Navigation closed. Supplies light, demand slack, except for fine wheats, which fully maintain their value; whilst middling and ordinary sorts could only be quoted at a reduction. Rye somewhat lower. Barley: Small supply. Peas steady. Wheat, fine 62lbs., high mixed 74s. to 76s.; 60lbs. fair quality 71s. 6d. to 72s. 6d.; mixed 59½lbs. to 60½lbs., 68s. to 69s. 6d. per 480lbs. Large barley, 38s. per 448lbs. Rye, 45s. to 50s. per 480lbs. Peas, 45s. to 46s. per 520lbs.

STETTIN, 21st December.—Supplies have decreased materially. The Island navigation is now closed, and the passage to sea is interrupted; indeed the season may be said to be at an end. The trade is steady, and some enquiries per spring from east coast of Great Britain; I myself have bought for British and foreign account a few cargoes of 61lbs. to 62lbs. Marks, at and at pari 67s. to 68s. per 50½lbs. for April, 1868. I note to-day wheat 61lbs. to 62½lbs., Uckermark 68s., Stettin 65s. 6d. to 66s., good Hungarian 62s. 6d. to 63s. 6d.; 50lbs. Oderbrück barley, 38s.; 52½lbs. to 53½lbs. dressed Moravian and Silesian 40s. to 41s. per 418lbs. Peas: Feeders and boilers 40s. to 48s.; 58½lbs. rye 49s. per 480lbs.; oats, 35½lbs. to 36½lbs., 25s. to 25s. 6d. per 320lbs. f. o. b. April, 1868.

ANGLAM, WOLGAST, GREIFSWALD, DEYMIN, and STRALSUND, 21st December.—Stocks are light and supplies moderate. A good trade has of late been done, chiefly by steamer and sailing vessel to Scotland and London; also some sales have been made, per spring, for British, Belgian, and Hamburg account, a few thousand quarters of which were bought through my medium, per April shipment. Quotations to-day are, for 61lbs. red wheat, 78s. to 79s. 6d. per 504½lbs.; 51½lbs. to 52½lbs. barley, 35s. per 448lbs.; 37½lbs. to 38½lbs. oats, 27s. per 320lbs., f. o. b. first open water in spring.

ROSTOCK, December 23.—We have had genuine wintry weather, frost, snow, hail, and rain alternately. I may here

remind my friends that though the river from the town to near Warremunde, the mouth of our river, may be frozen over, we can ship overland in waggons; consequently so long as the Sound or rather the Copenhagen and Elsinore Roads keep open we can ship; consequently our port is the latest closed in winter, and the first open in spring, which is often of great value to parties who may wish to have their shipments off ere the gross of those from the Upper Baltic, &c., arrives. Supplies are moderate for the time of the year; what comes to town is chiefly from dealers in the interior. I seldom knew stocks so light; what has come and comes to town, has been sent off either direct or indirect to Great Britain, Holland, &c. I do not think there are at present 5,000 qrs. sold and unsold wheat in the place: some 5,000 qrs. were bought through my medium for Scotland chiefly, and of other grain not more than is required for home use. I note for immediate shipment 61 to 62½lbs. wheat, 75s. per 50½lbs. Firth and to London and other places in proportion to the rates of freight-paying. Ships scarce, and freight 3s. to the Firth or coal port; 3s. 3d. east coast of Scotland; 3s. 6d. east coast England; 3s. 9d. London; 4s. 3d. west coast England and east coast of Ireland. The demand for the United Kingdom, chiefly London and Scotland, as also for Holland, continues; but few sellers, for want of stocks, supplies, and ships.

WISMAR, December 23.—Prices are about the same as ours; quality and condition of the grain similar to ours. Perhaps purchaseable 6d. or 1s. per qr. below Rostock quotations.

HAMBURG, December 21.—Trade slow, and prices have slightly given way. A moderate business done of late in the common run for French and Spanish account, also to Holland. Present quotations: Lower Elbe 60½lbs. wheat, 67s.; Marks Saale, 60 to 61½lbs., 68s. 6d.; Hungarian, 61 to 63½lbs., 64s. to 64s. 6d.; Bohemian, 60 to 61½lbs., 68s. to 68s. 6d. Contract wheat, per December, 63s. to 64s.; April and May, 63s. to 63s. 6d. free on board per 480lbs. Barley, per December, 46s. to 47s. free on board per 448lbs. Lower Elbe oats, 26s. to 26s. 6d. per 320lbs., the French being buyers at said rates.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

At the monthly meeting of the directors of this society, a letter from M. Cretin-Borne, dated 39, Devon-street, Eglinton-street, Glasgow, in regard to a new system of draining by means of a siphon, was submitted, along with remarks on the same by Professor Macquorn Rankine, consulting engineer to the society. The secretary was instructed to thank M. Borne, and to send him a copy of Professor Rankine's report, which shows that drainage by means of siphon-pipes has already been put in practice in this country on a very large scale, and with perfect success. Both communications were directed to be inserted in the next number of the Society's Transactions.

The following communication, addressed to the secretary, by Mr. J. J. Pratt, Consul-General, South African Republic, was laid on the table:

"Consulate, South African Republic,
69, Fenchurch-street, E.C.,
London, 16th December, 1897.

"SIR,—From your general knowledge of the agricultural interest in your locality, I have the honour to address you, not with the view of promoting emigration so much as opening a medium through which information may be disseminated relative to the South African Republic, which up to lately has been very little known, but is daily attracting increased attention, few countries offering equal advantages in pasturage, water, or general fertility of soil for sheep-farming, cattle-breeding, or general agriculture—the pursuits of the greater part of its 25,000 white inhabitants. All who have had the opportunity of judging admit that no country enjoys a more healthy climate, rendered cool by its altitude, and in every way well suited to the constitution of Europeans.

"Coffee, tobacco, sugar, and other tropical products are grown in suitable localities; while on the higher lying lands, similar to 'New Scotland' and 'Industria,' the finest wheat,

cereals, and fruit thrive; indeed, farming common to England is most successfully carried on.

"Land at present being very cheap, will of itself be a safe and profitable investment, from the fact that it is intended to construct either a cheap line of railway, tramway, or road, suitable for traction engines, from the capital to the new settlements, and each other main roads, that will reduce the distance and decrease the cost of transport of produce.

"With such increased facilities, the South African Republic, otherwise known as the Transvaal, is destined to become the storehouse of South Africa, supplying the neighbouring States with grain and other cereals at present imported from foreign markets.

"As Consul-General for the country, I have received commissions from residents to find suitable purchasers for nine farms, of 6,000 acres each, severally suited for sheep-runs, cattle, coffee, and general farming; diagrams of which I am expecting. As there may be from time to time further commissions, it is my desire to appoint some party in connexion with each club as agent on commission, to whom I could forward diagrams of farms for sale with general information, and thus privately be the means of, I trust, pointing out a country, the great natural advantages of which, both in a mineral and agricultural sense, is destined, as it becomes more known, to attract equal attention to Australia and New Zealand.

"I am expecting the finance minister by this or next month's mail, and shall be happy to forward information for the use of your club, or those who may have sons or friends who contemplate leaving England.

"Any suggestion you may make in furtherance of this object I shall feel great pleasure in receiving.—I am, sir, yours very truly,
"J. J. PRATT."

AGRICULTURAL EDUCATION.

A meeting of the Framlingham Farmers' Club was held on Monday, Jan. 6, in the Crown Hotel, when the subject for discussion, "Agricultural Education," was introduced by the president, Mr. F. S. CORRANCE. The attendance of the members was large, notwithstanding the wretched weather.

The PRESIDENT said Agricultural Education was a subject which had been discussed by the members of that club on a former occasion, when it was introduced by the Rev. J. R. Crowfoot in a most excellent lecture; but there would be a distinction between that lecture and the one he was about to give, inasmuch as he proposed to touch rather upon the broader features of some distinctive systems of education than attempt to enter into details as to the matter or thing taught. He put it to the clergy whether it was not desirable that the laity should come forward and speak on this subject. His reasons were the great importance that this subject, now more especially, possessed. Up to the present there had been on the part of the public, at least, a comparative indifference to it; but within the last two or three years there had been a stir upon it in all classes. In the higher classes there were many accusations against the system of education now prevailing; in the middle class they heard great grumbling at the commercial and grammar schools; and the lower classes also asked to be allowed to participate in those blessings which had been so generally diffused among other classes. As a proof of the discontent among the higher classes he could do no better than quote from the speech of Mr. Lowe, a double first-class man at Oxford, lately made at Edinburgh. Mr. Corrance then read several extracts from Mr. Lowe's speech condemnatory of the system which has prevailed of making "classical" studies the most prominent, if not the only branches of education, imparted at our public schools and universities. These were not new views, and he quoted them to show that there was a movement in this respect in the upper classes. As to the middle classes, they knew what had taken place in this county not long ago; the Framlingham College was a proof that the movement extended to the middle classes. The lower classes asked in no uncertain tones to be educated. They could not be postponed. The question was most urgent. He could show that it was very much to their advantage as employers of labour that the lower classes should be educated. He then quoted from Combe to show the uselessness for work of a man totally uneducated. They heard from the manufacturing districts that they could not compete with France, Belgium, and Germany because they had to deal with an uneducated class, and he thought that it might be accepted that, as employers of labour, they were all concerned in the question of education. This necessity for education extended to the agricultural classes, for the agricultural labourer must no longer be considered as a mere boor, but he was a skilled labourer. Therefore, as employers of labour, they were interested. Socially they were not less so; for to those who had studied the phases of modern society thus much was observable, that the education, the intelligence, and refinement of the higher classes made them adverse to anything like the employment of force. Supposing, in consequence of this feeling, the laws were relaxed (and the legislation as to master and servant was a proof that this would be the case), and that the persons of one class were left comparatively ignorant whilst the other became more enlightened and refined, what would occur? These laws would not meet their savage state. They were amenable to nothing but force, whilst the upper class appealed to nothing but reason. An ignorant man saw law only in proportion to its force. The only choice left was what sort of education should be given, and what means should be employed to impart it. He then proceeded to describe the different systems that prevailed in the United Kingdom, as well as those of one or two other countries, commencing with the educational system of the Irish national church. In 1832 the British Government instituted a commission for aiding the national education, the result being a system which might be said to have been almost purely secular, because all religious instruction was eliminated, except that which all sects, including the Roman Catholics,

approved. That was the Irish system so much belauded by the secular school, and it was time to judge of it by its fruits. From 1833 to 1841 the number of schools increased from 789 to 3,426, and the pupils from 107,000 to 464,000—a fact which was claimed by the secularists as a triumphant success. If they went further, however, they would find that that success was limited; for in 1851 the number was less, it being 460,000. In 1861 they found it still less—395,000. This seemed by no means a satisfactory proof that this was a system which should be adopted throughout. They might, indeed, hesitate to pronounce it a failure, because there were many considerations to be looked at in Ireland—such as the opposition offered by the Romish Church, and the great decrease of the population. They might be told that the per-centage of non-educated people was less now than it was in 1841; but he was prepared for that objection, because there had been an enormous emigration, chiefly from the non-educated classes, which would necessarily have the effect of increasing the statistical proportion of those who were educated to those who were not. As to the system itself, it was adopted to meet peculiar circumstances, and it was impossible to introduce education in any other way, and certainly by this means a very large number of grossly ignorant people had been raised to a comparative enjoyment of education; but what had been the results? There were those well acquainted with the social state of Ireland who told them that by this purely secular education we had not gained. Education had not, as they had seen, proportionately advanced; and the classes who were educated were not better citizens, but had simply become more dangerous. He next described the Scotch system of national education, tracing it from 1560-61, when repeated applications were made by the Reformed Church for the restitution of Church property that it might be applied to the purposes of education. He alluded to acts passed in 1567, 1568, 1592; and said in 1816 the Privy Council directed that in every parish where convenient a school should be established and a fit person appointed to teach at the expense of the parish. This was not fully carried out till 1696, when it was ordained that there should be a school and a school-master appointed in every parish not already provided, and that it should be conducted by the advice of the heritors (meaning the landlords and the ministers). The tenants were to pay half the rate if the landlords could recover it. Schools were established in every parish in Scotland. This was a national system upon the broad basis of an established church; it was undenominational, simply because there were no denominations; and even when, as was natural, these sprang up, the attendance was not affected; but the school depended more on the success of the teacher than the denomination of the school. The parents might differ in religious belief from those who conducted the school, but they sent their children. The education was compulsory upon all parishes; it was established on the principle of a rate, it was subject to the minister, the heritors, and the presbytery upon certain points, but was it applicable to England? Before answering that question he described the English system. In England, both from the superior wealth of the community and the more ample endowment of the Established Church, the voluntary principle had—if it had not completely kept up with increasing wants—succeeded in occupying the ground sufficiently to prevent the real necessity for State interference or local taxation. The clergy of all denominations were the active power; and from their social position, as well as their means, those of the Established Church had covered the country with schools. He then stated the provisions of the act of 1833, showing that State aid was divided into building grants, capitation grants, and (prior to 1861) grants for books, maps, and apparatus, &c. The recipients of the grants were schools connected with some religious body. In 1866 the Church of England received £350,000, the British and Foreign Society £58,000, the Wesleyan schools £28,000, the Roman Catholic £26,000, and the Parochial Union schools £120. It was remarkable that the Wesleyans alone had shown any increase in the amount of the grant made to them, the increase in their instance being

£2,076. He then stated the conditions under which the grants were made, and then summed up the characteristics of the different systems in force in the United Kingdom, by saying the Irish was principally secular, the Scotch was that the schools were supported by rates, and the English was almost purely voluntary, aided by the state. Next he noticed the arguments of secularists against religious education. They were told that education into which the religious element was introduced did not meet the requirements of the case, and pointed to Prussia and America, in which the numerical ratio of the instructed population was greater than in England. They asserted that in England, just where the need was greatest, no State aid was given; that parishes where a certain sum could not be raised voluntarily got no grant; and no doubt these were shortcomings of the system. But what was the system the secularists wished to introduce? They must take care that they had not to choose between two evils, instead of between an evil and a good (Hear, hear). It was said that the cupidity of parents was so great that it was impossible to overcome it by the means now at their disposal, and they advocated compulsion, and said to the clergy, "You are hard pressed, you lack funds; why don't you just set aside this little item of religious instruction, and the whole case can be met. If you do away with this religious instruction you can have a rate." Now he (the president) contended that there was no taxation more grossly unjust than a rate, inasmuch as only upon a small amount of the national wealth was it placed—only upon £56,000,000 out of £550,000,000. That was a vital objection to a rate were there no others, but there were. The rate would be levied upon all denominations alike, and secular education was therefore a necessity, and they could have nothing else. He might be told that the rate was levied in Scotland, and yet there were no denominational difficulties; but it must be borne in mind that in this country the great difficulty would be the sectarian feeling which prevailed, and in which it differed from Scotland. Then in Scotland the parochial schools were governed by the heritors and the ministers, and it would not be acceptable here for the landowners and clergy enormously to predominate in the council which ruled the schools. Scotland could not be quoted, and this principle of rating he, without hesitation, rejected (applause). Next was the question of compulsory attendance; and, as to this, America was constantly quoted. There they had truancy laws, and in 1863, in Boston, the number of cases of truancy investigated was 4,230, the number of absences from school for truancy was 6,038. The number of complaints against habitual truants was 88; number sentenced to two years' imprisonment, 30; to one year's imprisonment, 26; to six years', 13; to three years', 1; and in probation, 23. These "criminals" were taken to the house for the reformation of juvenile offenders. With such laws they would expect a proportionate effect, but he quoted the opinions of Mr. Fraser, one of the Government Inspectors of Schools, who had visited America, that even in Massachusetts the attendance at school was not superior to Scotland. He stated the ratio of attendance at schools to be the following:—In America, 1 in 5; in Prussia, 1 in 6·25; in Scotland, 1 in 6·5; in Holland, 1 in 8·11; in France, 1 in 9; and in England and Wales, 1 in 7·7. This did not show any very extraordinary result when they considered that what had been attained in England had been arrived at entirely by a voluntary principle. Next, he considered the thing to be taught, and he quoted at length from Combe, whose view was that doctrinal religion should not be taught, but that if Nature and her laws were presented to the mind of the young, the principles of religion, as well as of morality, were instilled and gradually recognized as an inevitable consequence. In fact Combe trusted by a secular education, by raising the minds of young persons to inquire into natural laws, to instill religion. He (the President) asked whether such an education as would be likely to produce such results could possibly be given to a child? The time (up to the age of 10 or 11) was so small that it was quite out of the question. He then again alluded to the educational system of the United States, where, he said, the theory was that the religious instruction not given in the day-school could be given in the Sunday-school; but he contended this had entirely failed, and made copious quotations in support of his contention. He also quoted from Cousin, the great eclectic philosopher, who was opposed to the general teaching of electricity; from Guizot and from Von Altenstein (minister of public instruction in Prussia from 1816 to 1840), who had ex-

pressed opinions virtually against purely secular education. He then spoke of the principle on which religious instruction rested. It rested first upon the acceptance of a God to be worshipped. They first accepted that as a personal fact, and upon that basis all their thoughts, devotion, and religious principles were founded, and this personal idea they found especially in dealing with the young. In the infancy of all nations, as in the infancy of individuals, anthropomorphic tendencies would prevail—that was, men would worship such a deity as they were themselves, but of a higher nature. The very first prayer that children were taught addressed God as a Father and a Friend. And was this to give place to philosophic abstraction? He could not consider that any such principle generally applied would have the slightest vestige of success (Hear, hear). Then, again, the voluntary system rested on voluntary effort and zeal, whilst the secular system rested on compulsion and a rate. Under the compulsory system there was no personal object to the teacher, except, possibly to qualify his pupils so as to get a grant, or in the case of some pupil of unusual ability to raise him to the level of some college distinction. But with the teacher of religious class, of whatever denomination, it was very different—he went into it as the grandest work of his life. He did not think, then, there should be a semblance of hesitation in the choice between secular and religious instruction. But what were the present requirements—how were they to be met? He admitted that the voluntary system did not quite meet the necessities of the case. It was necessary that there should be a general relaxation of the conditions now imposed before a grant was given. It should be given in proportion to the population to be educated, and not to the wealth of the parish (Hear, hear). The inspection should be undenominational. The examination of schools by inspectors of the denomination to which the schools belonged was very expensive, and did not produce an adequate result. What the State had to do with was, not religious instruction—the Government grants were for secular education, but they must not eliminate the religious element. He thought they might go so far on the rating principle as to have an orphanage for a county, and a school supported by a county rate. He should like to see one of those great union-houses converted into such a use, instead of the very useless purpose to which it was now put. It was amid great difficulty that they took their choice. In the settlement of this great question compromise must enter. They must make up their minds as to what were the vital points. He would say one word to dissenters—they were equally interested with churchmen in this matter. They might possibly think—he had seen signs that some of them had lately thought—that they might, to attain this great end of education, relax somewhat in certain respects. He had seen it with regret, and he would beg them, before they were prepared to make this great sacrifice, and advocate secular instruction as the only mode in which general education could be given to this nation, to count the cost. The cost might even amount to the loss of that respect in which, from the consistency of their opinions, they had been held; the loss of that regard which Christians of all denominations felt towards one another; it might be the loss of that Christian charity which now exists between the sects. Now this was no light matter to decide. Let him also urge them for another reason, which was this—between them and the philosophy of the nineteenth century there was very little in common. Between the portico and the chapel there was a perfect gulf; there was no common feeling between them, and he did not say he did not honour the chapel in that respect. Did they suppose the cold and tolerant spirit of modern philosophy would recognize the principle of sect? It abominated it from its heart. The scepticism of the nineteenth century would join with the dissenters, but for what? To destroy the church first, and then to destroy the dissenters (Hear, hear). Let them be perfectly aware of this—he had himself walked in the portico, and he knew the feeling of those scientific men and the conversation among themselves. He need say no more than this—"Count the cost, know the line you propose to take, and then do it if you like" (applause). In conclusion, he said he had foreseen what was coming, and had taken his choice, and they must remember it was only a choice which now remained to them; it was imminent, and was advancing every day upon them, and they must form their opinions now. There were many requirements in the present system which must be met. On many sides it would be attacked, and it must show itself capable of

embracing a much wider field, and satisfying a much larger want, and he bade them look to it. With these observations he left the matter in their hands for discussion (applause).

Mr. TAYLOR (Framlingham) asked for an explanation of the statement of the President as to the system of education in the United States, for he believed the Truancy laws were in existence only in Massachusetts. He knew they were State laws, and not the enactment of Congress, and he believed they were in operation only in Massachusetts.

The PRESIDENT: They have broken down completely.

Mr. P. READ (Framlingham) read an extract from a speech of Professor Fawcett, describing the condition of the labouring man as very sad, his wages were small, insufficient to provide for the bare necessities of life; the parent was unable to pay for the education of his children; consequently, in spite of vast educational grants, the agricultural labourer could not afford to keep his children at school. He (Mr. Read) pretty well knew that the statements of Mr. Fawcett were facts, and that notwithstanding educational grants, the labouring man could not afford to send his child to school; and how were they to get over that? But admitting that they did get over it, the farmers did not care much about the education of the labourer (Oh, oh!) The farmers said they had but a small opinion of education, and he did not think they liked to see a labouring man much educated (Oh, and laughter). If they did the children would be better educated. If they appreciated a well-educated labouring man, they would take steps to have him properly educated. As a tradesman he (Mr. Read) had some little interest in this state of the case. It was bad because it was debasing to the labourer, unprofitable to the farmer, and very pernicious to the tradesman that the labouring man was not a better article than he was.

Rev. F. A. JOHNSON (Stratford St. Andrew) said he was in direct antagonism to the last speaker, for it had long been his opinion that every agricultural labourer might and ought to be independent. Every agricultural labourer, if he set about it, might marry with a cottage of his own, or the equivalent in wealth; and, if he married at the proper time, and if he did not get into debt or give way to smoking, and so on, might have sufficient money by-and-bye not only to educate every child he might have, but to live in a state of competence and comfort for the whole of his life. If a young man, when he was 18 or so, earned the same wages as his father, he might very easily lay by several shillings a week, and in the course of five or six or ten years this would amount to a very considerable sum. He knew a young man who had saved £40. He suggested that the children at school should be encouraged to lay by, and said no labourer in England, certainly none in Suffolk, need ever complain that he had not the funds to send his children to school. He alluded to the Government system of education in Prussia, where he was, he said, amused to find the police inquired into the educational statistics of every family, the gentleman's as well as the labourer's. Fancy a policeman going to him to ask if his children were properly educated! He happened to be in a part of Prussia where manufactories had started up rapidly, so that the schools were inadequate to the population, and, education being compulsory, the school was crammed with one set of children in the morning and another in the afternoon. We in England were so fond of liberty that it would be a long time before we could agree to a boy being imprisoned for playing truant. If, however, the Legislature should see fit to bring about some law by which the children should be compelled to go to school, he should rejoice in it. He referred to the provisions of the Agricultural Gangs Bill at some length, and afterwards said the greatest difficulty they had was with that curious mixture of the cart-horse and the monkey, who was apt to stand about at the corners, who never had learnt anything, and, in the present state of the law, never would learn anything. Supposing a child were kept at school till he was ten, he was apt, when he left, to forget all he knew, and the rev. gentleman therefore spoke in favour of night-schools. He further urged the desirability of Government granting assistance in small rural parishes, which were unable to raise the amount by voluntary subscriptions which was now required before they could obtain a grant. As to the religious question, he expressed his strong conviction that purely secular education could never be accepted. As someone had said, the education of children in secular things without religion would make a nation of devils; the effect of secular education in Ireland had been that there were

many Fenians; but in the North, where the religious element was combined with it, the people were loyal. He advocated the principle adopted at the Framlingham College, where there was a recognised religious basis, but every boy whose parents desired it was exempt from religious instruction.

Rev. T. COOPER (Unitarian) said he did not doubt that all agreed that education was extremely imperfect unless it included the religious element. It was his decided opinion that without religion no education could be perfect. Suppose they had a national system, he wanted to know whether they would let the clergy into the schools to conduct the religious part of the education, or what means would they adopt to give the scholars religious instruction?

The CHAIRMAN said Mr. Cooper was putting a hypothetical case, to answer which he must pre-suppose the existence of a national system.

Mr. COOPER: Sir James Graham failed, recollect.

Rev. J. R. CROWFOOT (Wangford) agreed with most that the President had said, though not with all. As to the national system, he believed it would be such a perfect revolution that he should at once withdraw from giving any support to any school with which he was connected, and at once establish a school in connection with the church of which he was a minister. He believed a great number of the clergy would do the same, and he believed it would be very much better to modify the present system and adapt it to the requirements as they arose than to introduce such a revolution as that. They went on the principle that heaven and earth shall pass away, but Christ's words shall not pass away, and therefore it was most important that Christ's words should be instilled into the minds of the children (Hear, hear). Englishmen objected to compulsion, but he believed it would be most desirable to extend the system begun in the manufacturing districts, and now partly introduced into the agricultural districts, and encourage parents to send their children to school at least till they were 12 years old, and encourage employers to employ only such children as had been to school. After speaking generally of the value of education, Mr. Crowfoot admitted the force of the assertion that parents could not well afford to send their children to school. The education came at the time when the parents were poorest, and to a man who had to keep a family on 12s. a week a penny or twopence a week was a serious consideration, and hence there was a great temptation to take the child from school and send him into the fields as soon as he could earn anything. The difficulty was chiefly with the boys, who at eight began to be irregular, and at ten were often taken away altogether. At twelve or thirteen the boy went to a night-school to endeavour to get back what he had lost. At fifteen he thought himself too much of a man for the night-school, and probably knew no more than he did at ten. He (Mr. Crowfoot) wished to see some modification of the present system introduced. If they could keep the boys till twelve, for say, two hours a day, they would be able to read and write, and keep accounts, as far as there was any necessity for it. He suggested that employers should not take children unless they had been to school, and he would have three school times in the day—one from seven to nine in the morning, one from ten till twelve, and the third from two till half-past four, and it should be required that every child under twelve, employed in agricultural work, should be compelled to go to school in one of these periods (Hear, hear). They would find very generally that the younger children would be sent from seven to nine, and two to half-past four, and those who did work from ten till twelve, and that would give them quite education enough if they went until they were twelve years old. The half-time principle, he believed, quite impracticable. He had several objections to night-schools—when the boy went to them he was tired after his day's work; they could only be open in winter; they depended on volunteer teachers, who were apt to be *dilettanti* in their work, and go just when they liked. In the last place the lads were apt to be led into bad habits, and to frequenting public-houses, if they went out of their homes at night.

Mr. J. LARNER said he had come rather to learn than to speak, and he did not know that he could say that his mind was fully made up upon the subject. His present opinion was not that he entertained a year ago, and therefore he had listened with interest to the sentiments expressed by Mr. Corrance. With some he sympathised most thoroughly; as to some the sentiment he felt was not exactly sympathy, but on

the whole they were deeply indebted to Mr. Corrance for gathering all this information together. It seemed to him that there were three questions before them, one as to the subject itself—must the children be educated? That question had been satisfactorily answered by Mr. Corrance, who had proved by reference to public sentiment that the children must be educated, that there must be a greater effort, a wider basis must be established for the purpose of educating the rising population. He was glad to know that this conviction was prevailing in the agricultural districts as well as the manufacturing and commercial. The next question was the means by which the education was to be imparted, and he heartily sympathised with the reference Mr. Corrance had made to the importance of keeping education voluntary. No one had more sympathy for voluntary effort, or hated the very name of compulsion more, than he (Mr. Larnier), and he had listened with much interest to the statements of Mr. Corrance. He felt they were in this matter touching something which strongly resembled a hedgehog, and had a great many prickles about it—a thing that must be dealt with very carefully, and he confessed his convictions were at present hardly settled. If he had been asked three or four years ago he should have pronounced decidedly against anything in the shape of compulsion; but having read other statements from America than those of Mr. Fraser which Mr. Corrance had quoted, he might be excused if he said there were two sides to the American question (Hear, hear). He had lately read the letters of Mr. Newman Hall from America and the lecture delivered after his return, and he confessed his feeling as to the compulsory system had been considerably modified, and he had at all events come to a different conclusion as to the character of the American education to that of the Chairman. He echoed the statement of Mr. Crowfoot, that they might have, at least, as much compulsion as existed in the manufacturing districts. When the measure affecting factories was introduced, some evidence was taken, and an objection then existed to it. That objection was now quite withdrawn, and it would be difficult to find a manufacturer who was not prepared to admit that the amount of compulsion brought to bear had been beneficial. There had hitherto been too much pottering and bother about creeds and denominationalism and so on in the matter, and they had neglected the great claims the children had on them. The problem was how far they could use compulsion, and he now came to the third question, how far the religious element could be introduced. All would sympathise with the idea that the religious element must be present, but there arose the weighty question Mr. Cooper had put—supposing they should have a national system of education (and he held it a fair hypothesis to start), and supposing in that system the religious element should be incorporated, who was to be the judge, the teacher, who was to sustain the character of religious instructor? How far was religious instruction to be embodied in it? He felt it must not be left out, but at the same time he felt they must keep out everything denominational and sectarian, and thus there was a difficulty he hardly saw his way to get over (applause). The question was hedged about by difficulties, and he had already said he came to learn, and he must confess himself still a learner (applause).

Mr. C. H. CHEVALLIER could not conceive any education

deserving the name, which was a mere secular education, and that was the feeling both among the clergy and those who differed from them. He expressed his hope that the plan suggested by Mr. Crowfoot might prove feasible. It was impossible to expect that in agricultural districts children should be kept at school till they were twelve. They had to work for their livelihood, and if they were to be good labourers they must begin early. A child who was learning to drive a tumbrel was undergoing a system of education; but it must not be forgotten that there were other things to be learnt (applause).

Mr. G. GOODWYN believed in the necessity for religious education. They would consider it necessary in the case of their own children, and therefore it was necessary in the lower classes. The parents were not able to impart religious instruction to their children, and expected them to receive it at school. If a man went himself to some place of worship he usually left his children to wander about, and they should be induced by what they learnt at school to go to a place of worship also. It was formerly the custom of the Club to express its opinion upon the subjects they discussed, and he proposed "That no system of education can be considered satisfactory which does not fully recognise and provide for religious teaching."

Mr. G. JEAFFRESON asked if Mr. Goodwyn would go a little further, and say what form that religious instruction should take? They were agreed that secular education was a great advantage, and then they encountered the great difficulty of religious instruction. They were also agreed that there must be religious instruction in some way or another; no human being was ever born who did not want something to help him to develop his religious feeling in the same way that he wanted help in the development of every other element of his composition, and the question was, how were they to develop the religious element which was in all, but differed in every one?

Rev. T. COOPER said the difficulty was met by the Irish system, by which books for secular education were provided, and should there be any Roman Catholic in the school the religious instruction was intrusted to the priest, in other cases the religious instruction was carried out by the parent. He was a Unitarian, and if his children went to these schools their religious instruction would be left to him or his minister. The noblemen and gentlemen of Suffolk established the Framingham College, and wisely provided that the religious instruction should be omitted if the parents wished it, and the boys did not attend the chapel. In 99 cases out of a 100 they did attend the religious instruction of Mr. Daymond, but there were one or two boys who went to his (Mr. Cooper's) chapel. He really thought the clergy would find, if they had a little more confidence in mankind, they would get on much better than at present.

THE PRESIDENT briefly replied, alluding to the points made by the various speakers. He with Mr. Larnier could not see how, with a national system of education, they could give religious instruction, and therefore he adjured the national system, and advocated the modification of the present system.

Mr. GOODWYN's motion was then put and carried with two dissentients, Mr. Jeaffreson and Mr. P. Read.

A vote of thanks to the President closed the proceedings.

STOCK-FEEDING AND MEAT-MAKING.

SIR,—The public mind has been lately a good deal excited about the price of meat; it behoves us, therefore, to produce it as abundantly and cheaply as we can, consistently with our interests as farmers. How to do this and to turn to the best account our consumable produce, as well as to preserve unimpaired the manure resulting from its consumption, is the object of this paper. In agriculture, as in other arts, it is well to free our minds from the bias of old customs and prejudices, and to weigh them well against the improvements that science points out; and that the change of circumstances resulting from the introduction of steam-power almost necessitates. The man who develops his animal in the shortest time, at the least cost, with a good sanitary condition, must be in that respect the best farmer. In arriving at a successful conclusion I have been guided by observation and experiment, and have derived much valuable support from a study of the late Mr. Horsfall's

papers in the Royal Agricultural Society's *Journal* (vols. xvii. and xviii.). We think that we have arrived at a good method, seeing that our 18 and 20 months old beasts have been purchased by butchers as Christmas beef, and our sheep are dead-ripe at 12 months. It is very easy to fatten old, full-grown animals, but young animals are like boys, seldom naturally fat; it becomes therefore necessary to vary and intermix their food, and to prevent over-exercise. Building up a young, growing animal is, in some respects, like building a house or growing a plant; unless all the required materials or ingredients are present in fit condition, due proportions, and sufficient quantities, the house cannot be properly built. The absence of a single element may render unavailable all the rest. In vain have we bricks, slates, lime, sand, boards, nails, and labour; they may be all useless without water or any other one of those substances. The food that makes fat will not

make bone or lean, and so on with other parts of the animal. A full-grown animal, with its bone and lean already made, should be differently fed from a young, growing animal. For want of knowledge on this matter some farmers waste an immense quantity of food, by failing to get a proper return for it in meat or milk. In the following it will be seen that I give bran to make bone, malt coombs to produce lean or muscle, in addition to the ordinary food. The condimental food I find important; in the crushed and boiled linseed we get rich and soft fat; bean-meal gives firmness. Warm food in cold weather is profitable; the animals should also be kept in a warm but well-ventilated place, the floors paved and cemented. Full bellies, distended sides, with a comfortable, contented attitude, give evidence of good management. An active, fidgetting, discontented, and expectant attitude, with inquiring look and complaining voice, indicate neglect or mismanagement by the stock-feeder. If animals feel cold they will use too much exercise to be profitable. Animals should always have access to water, especially when much dry food is used, and rock-salt should be always in the feeding-troughs. When animals are brought to us in store condition, we feed them sparingly at first, and gradually increase the quantity and quality. When reared at home and well-fed from their birth, no such precaution is necessary. Animals that cost us £10 generally turn over or double their value in about four months.

FOOD CONSUMED BY EACH BULLOCK WEEKLY, AND ITS COST.

	lb.	s.	d.
Linseed cake and cotton or rape cake mixed	28	2	4
Bean-meal	42	3	6
Hay in chaff	28	1	0
Malt coombs	6	0	4
Bran	6	0	4
Linseed (as soup)	3½	0	7
Condimental food	3½	0	7

Per week 8 8

Roots 30lbs. per day; straw chaff *ad libitum*—about 2 bushels per day.

No charge made for the roots, straw, or attendance. All the rest charged at market prices.

WEEKLY CONSUMPTION OF FOOD PER 100 LAMBS THAT WILL BE SOLD FAT IN FEBRUARY, 1868.

	lb.	£	s.	d.
Grass hay (in chaff)	110	0	4	2
Bran	112	0	6	0
Black oats (ground to meal)	154	0	16	0
Malt coombs	77	0	4	4
Linseed cake	258	1	6	0
Beans (ground into meal)	112	0	10	0
		£3	6	6

Or 7½d. each per week.

They are now on white turnips, for which no charge is made. The white turnips are after peas, picked for the London market. The conditions may be described as follows: 1. The cattle to be placed in covered and enclosed sheds on paved floors, or on sparred floors. 2. The ventilation to be perfect and well above the animals. 3. The straw or litter to be supplied very cautiously and in small quantities, so that no fermentation can take place. In cool weather the bedding may accumulate to the depth of 18 inches to 2 feet, and is then quite fit for the land. 4. One hundred superficial feet of space is ample for each bullock of two years old, when fat; and, if accustomed to each other, English Shorthorns may be loose. 5. A closed shed to hold twenty may be built of brick and slate in the most substantial manner for £120 to £130; the floor paved and cemented; the bricked walls eight feet high. 6. A supply of water always available. 7. Food to be varied in kind, commingled, intermixed, and administered in a moist and warm condition. 8. The proportion of roots to be comparatively small—say one-fifth in bulk; the quantity of straw-chaff to be large, and hay-chaff in proportion of one to five of the straw. 9. Scouring or laxity of bowel is a sure sign of unprofitable progression, as it would be in human beings. Said one of my men to me to-day, "Half the farmers' cattle 'scour,' and in consequence put on flesh very slowly;

and so should we under the like circumstances." A large practical farmer who has recently seen our system of feeding, writes thus to his friend: "I look upon Mr. Mechi's system as an agricultural manufactory quite right in principle, and must sooner or later be adopted." The best evidence of the success of this mode of feeding is the condition of the excretions, indicating neither constipation nor relaxation—so different from the purgative condition arising from an entire root diet. Frequently we hear of the loss of a fine ox, caused by an over-supply of unmixed bean-meal, or hard, dark, unsoftened cotton-cake. The various kinds of food give each a different condition of meat. Bean-meal prevents laxity of bowel, and gives solidity to the meat; but it must be used in moderation, and in conjunction with other food. Linseed is laxative, and gives soft, rich fat. In pig-feeding, two-thirds barley-meal and one-third pea-meal answer well, especially when aided by skimmed-milk. It will be seen by the foregoing that we build up our young animals amply and rapidly fit for the market. The variety and amplitude of the food causes this effect, aided by shelter, warmth, and tranquillity. Such effects cannot be produced by the too-ordinary mode of relying on only two or three sorts of food. Hay alone, or turnips alone are a great economical mistake. I could never satisfy myself or the butcher until I added linseed and condimental food to the other ingredients. remember that I am speaking of young growing animals. Let us now consider the very important part of the question, I mean the quality of this meat, for on that mainly depends your getting top prices and a steady demand. The meat, although so young, is rich in flavour, mellow, tender, and juicy, well mottled with fat, neither too soft nor too hard; and this character, or rather quality, extends to the forepart of the bullock, which is generally the butcher's difficulty. The bone is small, and the joints well adapted to small families, where the number of domestics is limited. The appearance of the meat, too, is satisfactory as it hangs in the butcher's shop; nor does it require to hang three or four weeks, like great coarse dark four-year-old beef, to "break down" the tough fibre. It is true some "old staggers" prefer a higher flavour and darker colour; but there is a majority of "young staggers" who like this young, juicy, tender meat, and so it sells well, which is the main agricultural object. Butchers are aware (although the public may not know) that the mode of feeding has a marked influence on the quality of meat. Beans and peas make it hard, linseed makes it soft, so does barley; turnips give an unpleasant flavour. It is only by admixture and balancing or adjusting variety and properties in food that satisfactory results can be obtained—the happy medium in fact. The same remark applies in degree to mutton and pork. I have heard butchers say that mutton fed on turnips only at a particular season absolutely smells of turnips when cooking, much as milk and butter taste of them when too freely administered. Before we determine upon the mode of feeding, we must especially consider what has been the previous treatment and condition of the animal. If ill-fed or half-starved, as is too often the case with store animals, the change to good food must be very gradual, or dangerous results will follow. Animals in well-fleshed condition may be treated more liberally. Time is very desirable with young animals that are still in a growing condition. Those who admire our heavy corn crops, and express surprise at their ample development on such naturally poor soil, should consider that they are due, in a great degree, to our rich and ample stock-feeding, as well as to drainage and clean and deep cultivation. The large quantities of corn, cake, &c., consumed, repair the exhaustion caused by the exportation of corn from the farm. Our object in high and varied feeding is not only to develop and mature early the young growing animal, but especially to enrich the soil, so that it may produce very large cereal and other crops. By so much supplementary food we can maintain an unusually large quantity of live stock; we also get a much better price for our straw by consuming so much of it. The animals are also maintained in better health. On poor arable lands especially, the farmer's profit depends greatly on the successful management of his live stock; at all events that is my case; and, as my farming does pay, I think it a duty to communicate to my brother-agriculturists the practice that is with me successful. On such soils we keep much stock well fed, to make rich manure, with the view to produce great or maximum crops; for without an abundance of this the farm would not pay. Looking at the condition of the many millions of acres of grass

land in this kingdom, and observing the appearance and rate of progress of the animals feeding or existing upon them, we must come to the conclusion that, owing either to want of capital or want of inclination and belief, there is an immense

margin for increasing profitably the food of the British people. Let us hope that with the overflow of capital and increasing agricultural intelligence, the days of poor grass lands will be numbered.

Yours, &c.,

J. J. MECHI.

A HOUSE OF FARMERS.

At the dinner of the Vale of Avon Farmers' Club, Lord Malmesbury termed the House of Lords "a House of Farmers;" for, as he went on to say, "there was probably no other body of men so perfectly acquainted with Agriculture and with its principles and improvements." There should be surely matter for congratulation in such an announcement, for the more the leading land-owners of the country know of the actual business of farming, the more likely are they to appreciate and encourage the exertions of their tenantry. It may be doubtful as to with what degree of admiration his Majesty George the Third was styled "the Farmer King," but on the first blush of it there is certainly something satisfactory in hearing that so comparatively passive a body in the State has engaged itself so actively in so commendable a pursuit as that of agriculture. The countenance of the Lords is no mere patronage, discharged as one of the many duties of a position and forgotten forthwith, but on the contrary, they are "perfectly acquainted with its principles and improvements." Lord Malmesbury, however, went still further in justifying the additional title he had bestowed upon his fellows, and said, although "it was not necessary to mention names, they would find at every agricultural meeting members of the House of Lords gaining first prizes, putting themselves at the head of agricultural societies," and so on. It would seem that his Lordship did not know when to stop, as his going into detail has not been everywhere so well received. It is argued, indeed, that the Lords gain too many first prizes, and in this way are far too fond of putting themselves at the heads of agricultural societies. *The Pall Mall Gazette*, as speaking for the farmer, declares "that the ordinary tenant-farmer, with his moderate capital, has no chance against gentlemen who can spend whatever they choose in the purchasing, breeding, and fattening of stock for the purpose of winning prizes at these exhibitions. The farmers say that when a wealthy landlord wins a high prize he ought to decline the honour, and pass on the cup or the purse to the tenant-farmer who comes next to him in the list of competitors. Agricultural meetings are arranged for the special purpose of improving the quality of animals, and although the rearing of fancy stock is no doubt important in its way, still it is so pleasant an amusement to men of means that they might well forego the prizes and allow them to pass to those who have to live by farming as a business." It is strange, perhaps, that we have seldom heard farmers talk after this fashion; although it is only fair to say that the *Gazette* applies its criticism more especially to provincial Shows, where, no question, the presence of any superior stock or even of an individual animal from a famous herd or flock might do much to spoil sport. But the more renowned exhibitors, as a rule, do not enter at these local gatherings; or if they do, nothing is more common than the practice of handing back the premiums, or offering them for further competition on another occasion. An instance is given by our contemporary in the recent Tredegar show, where Lord Tredegar himself, his son, and his brother carried off a number of the prizes. But were we pressed

to name any particular breed of stock for which Lord Tredegar and his family are celebrated, we doubt if we could go for anything beyond horses, and here his lordship and his relatives appear to have been chiefly successful for beasts and pigs. We do not remember that Lord Tredegar ever even exhibited a bull or a boar at a national meeting, so that there was all reason for his trying his strength about home. Moreover, the last Tredegar show, like too many such displays of late, was most probably not a large nor a good one; so that had Lord Tredegar and his relatives withdrawn their stock, there would probably have been no show at all.

Taking a wider view of the question, nothing would promise to work so badly as barring out the lords and confining the competition to the tenants; as we are, indeed, quite sure that the farmers themselves would be the last to propose such a condition. The whole *éclat* of the thing would be gone, when it was once understood that "the fancy stock" was shut out. And farmers, be it remembered, can hold their own against their landlords. From very humble beginnings Jonas Webb went on until he had beaten the world: the rivalry between the late Duke of Richmond and Mr. Rigden, a tenant-farmer in his own county, was a standing joke between the two, as this or that flock was first; and the Booths and the Douglass, with the most costly of all "fancy stock," have known no superiors amongst those with longer purses and higher plaes. It may be difficult to define "an ordinary tenant farmer" in these times; but, as times go, there are many tenant-farmers, like many noble lords, who do not care about competing at country-side societies, but keep back for the grand days when they know that they shall meet the best of the breeds, and even then with a fair chance of winning something.

Fancy stock, again, "is no doubt important in its way," or, in other words, is the very foundation of our improved breeds. Fancy stock means the pedigree bull, the carefully cultivated Southdown, the quick fattening pig, and the well-bred horse. Lady Holmesdale has fancy stock when she rears the finest and heaviest Dorkings, just as Lord Walsingham has the best rams, or Colonel Towneley the most famous bulls. Admitted, that the ordinary tenant farmer could not afford to give a hundred guineas for a sheep or a thousand for a Shorthorn. But what then? What is the effect of his landlord doing so? It has been said—and said, we believe, truly enough—that the influence of a good bull has been seen in a district for years and years afterwards; and as it has been, so it will be. If the ordinary farmer has his wits about him he may benefit by these high-priced animals without going himself to so large an outlay, and eventually, as has happened before now, beat his own landlord, as it were, with his own weapons. Or, at any rate, he may vastly improve the character of his own herds and flocks through opportunities that he could not enjoy but for the great man's tastes in this way. It would be idle to attempt to deny the excitement and gratification experienced in competing for and winning "Royal" premiums, as very likely noble lords would not go to the expenses they do but for such incentives. Lord Malmesbury, however, is right enough in what he says; for one Lord Leicester or Lord Spencer of forty years

since, we have now hundreds of their fellows following in their footsteps, while nothing would be more unwholesome than any attempt to drive them from such pursuits. The moment we talk of excluding them, so certainly we do so. On the contrary, let our agricultural shows, of any calibre be, like our Derby and St. Leger, open to the world, and the prizes to anything that can win them.

The Council of the Royal Agricultural Society has just done well in removing the restriction as to animals which have taken a first prize in a class ever competing in that class again. They may henceforth hold their own as long as they can, and we shall be thus enabled to judge more certainly of our progress. It is not always that landlord and tenant can meet together with advantage; but they have always done so on the show-ground, as they always will, so long as a Rigden can compete with a Duke of Richmond, a Druce with a Duke of Marlborough, or a Davy even against a Royal herd.

VALES OF AVON AND STOUR FARMERS' CLUB.

The annual dinner of the members of this society took place at Newlyn's Hotel, when the prizes for root crops were distributed as follows:—

A silver service, value £5, given by Admiral Walcott, M.P., for the best crop of roots grown by a member whose holding does not consist of less than 100 acres of arable land, the root crop to be one-sixth part, Mr. T. Law, of Kingston, 20 tons 10 cwt.

A silver salver, value £5, given by Admiral Walcott, M.P., for the best five acres of mangold wurzels, Mr. C. Reeks, Christchurch, 28 tons 7 cwt. 1 qr. 16lbs.

A silver sugar basin, value £5, given by Col. Fane, M.P., for the best 10 acres of swedes, Mr. T. Law, Kingston, 20 tons 6 cwt. 21lbs.

£2 for the best five acres of swedes, Mr. T. Whicher, Holdenhurst, 21 tons 2 cwt. 3 qrs. 12lbs.

£2 for second ditto, Mr. H. Whicher, Sopley, 20 tons 12 cwt. 1 qr. 14lbs.

£2 for the best two acres of mangold wurzels, Mr. G. Reeks, Christchurch, 20 tons 12 cwt. 1 qr. 14lbs.

£2 for the best 5 acres of turnips, any variety, not swedes, Mr. T. Law, Kingston, 19 tons 12 cwt. 1 qr. 14lbs.

£2 for second ditto, Mr. R. Searle, Muscliffe, 13 tons 5 cwt. 2 qrs. 24lbs.

£2 for the best crop of roots, grown after a green crop, fed off after the 1st of May, Mr. C. Reeks, Christchurch, 21 tons.

A silver cup, value £5, given by the Agricultural Manure Company, for the best 5 acres of swedes, grown by their manure, Mr. T. Whicher, Holdenhurst, 21 tons 2 cwt. 8 qrs. 12lbs.

A cake basket, given by Mr. Henry Sharp, for the best 8 acres of swedes, grown by Prentice's manure, Mr. T. Whicher, 20 tons 12 cwt. 8 qrs. 12lbs.

The judges were Mr. John Taylor, jun., Mr. W. Whicher, and Mr. W. Newman.

THE FARMERS' CLUB.

SUBJECTS FOR DISCUSSION IN 1868.

February 3.—The Sale and Transit of Home and Foreign Stock. Proposed by Mr. Clare Sewall Read, M.P., Honingham-Thorpe, Norwich.

March 2.—Would not the make of English Cheese be generally improved by the introduction of Cheese Factories? Mr. George Jackson, Tattenhall Hall, Chester.

April 6.—Would Compulsory Education promote the Interests of Agriculture? Mr. John B. Spearing, Benham Lodge, Reading.

May 4.—The Justice of Funded and other Property, now Exempt, contributing to the Maintenance of the Poor. Sir G. S. Jenkinson, Bart., Eastwood Park, Berkeley.

November 2.—The Undeveloped Power of British Agriculture. Mr. J. J. Mechi, Tiptree Hall, Kelvedon.

December 7.—The Influence of Railways upon Agriculture. Mr. J. K. Fowler, The Probendal Farm, Aylesbury.

WINFRITH FARMERS' CLUB.

The following are the prizes awarded by the judges, Messrs. J. Keynes and J. Rawlins, of Spetisbury, at the annual dinner.

General root crops: First, Mr. T. H. Saunders, of Watercombe; second, Mr. W. Budden, Coombe Keynes, Lulworth; third, Mr. G. Ellis, Burngate Farm, Lulworth.

Best ten acres of swedes: First, the Earl of Eldon, Encombe House; second, Mr. C. Besant.

Best five acres of swedes: Mr. W. C. Lacey, Bestwall House, Wareham.

Best ten acres of turnips: Mr. R. White, Burton Farm, Wool.

Best five acres of turnips: Messrs. T. and R. Randall, Winfrith.

Best ten acres of mangold: Mr. W. Mead, Monastery Farm, East Lulworth.

Best five acres of mangold: Mr. T. H. Saunders, Watercombe.

Best one acre of mangold: Mr. W. C. Lacey, Bestwall House, Wareham.

TITHE COMMUTATION. — SEPTENNIAL AVERAGES.

SIR,—As many of your readers may feel desirous to know the result of the corn averages for the seven years to Christmas, 1867, published in the *London Gazette* of this day, viz.:—Wheat, 6s. 8½d.; barley, 4s. 8½d.; oats, 2s. 10½d. per imperial bushel—as successor to the late Mr. Charles M. Willich, I beg to state, for their information, that the £100 of tithe rent-charge for the year 1868 will amount to £100 18s. 8d., or about £2 per cent. more than last year.

The following statement will show the worth of £100 of tithe rent-charge for each of the following years:—

	£	s.	d.		£	s.	d.
1861 ...	118	8	4½	1865 ...	98	15	10½
1862 ...	109	18	6	1866 ...	97	7	9½
1863 ...	107	8	2	1867 ...	98	19	4
1864 ...	108	8	10½	1868 ...	100	13	9

The general average value of £100 tithe rent-charge for the whole period of 32 years since the passing of the Tithe Commutation Act is found to be £100 16s. 1½d.

I remain, sir, your most obedient servant,

CHARLES M'CABE, Secretary.

University Life Assurance Society, 24, Suffolk-street, Pall-mall, Jan. 7.

PROFESSOR GAMGEE ON THE SHEEP.—At the meeting of the Hungerford Farmers' Club Mr. Wentworth read a paper on the diseases of sheep, the substance of which, as well as of the short discussion that followed, is embodied in the following proposal: Mr. Wentworth and Professor Gamgee had agreed to commence the inquiry as soon as they had collected £50. He was prepared to make a great sacrifice to procure that knowledge of the causes of the diseases of sheep which he was as yet unacquainted with. The Professor could benefit the farmers if they would help him. He proposed that, at first, monthly reports should be issued and at the next meeting of the committee he (Mr. Wentworth) would move that such report be circulated among the subscribers to the fund. They could not object to contribute a sovereign a-year, as that was only equal to the loss of a couple of animals. The Professor would undertake that three days in each week should be devoted to the inquiry. The flock-masters might, of course, decline to act on the Professor's advice if they chose to do so. The inquiry could be conducted under the direction of a committee, composed of the committee of the Newbury Farmers' Club, and other gentlemen who might desire to act with them. Any amount would be received by the committee for the fund. Something of the same kind was proposed some time since at a meeting of the Newbury Club,

COUNTY EXPENDITURE.

At the dinner of the Wadebridge Farmers' Club, Mr. N. Kendall, M.P., in the chair, there was a very large attendance, one hundred and fifty sitting down, while many more were accommodated elsewhere. In the course of the evening,

Mr. RICHARD POLLARD said he should take that opportunity of referring to the all-absorbing question of the county expenditure. And first, he must say that he could not see the use of straining at a gnat and swallowing a camel; and he would counsel them not to be decoyed away from really oppressive things, to things of minor note, but let them earnestly give expression to their feeling, openly and fearlessly, with respect to these burdens, which bore upon them and the clergy so oppressively. Notwithstanding what his friend, Mr. Hart Key, had said about the clergy, that body was taxed more heavily than any other part of the community; and while referring to this matter, he would venture to make an assertion, which was that the clergy of Cornwall paid more taxes than all the merchants, miners, ship-brokers, doctors, and other professional men in the county. Was that fair, he would ask? When the principle of rating was first applied, the landed interest was the great interest of the country. Liverpool was then a mere fishing village; but since that time merchants had become merchant princes. Notwithstanding that, the burden of taxation still fell on the clergy, the yeomen, and the farmers of the country, while the other wealthy classes were allowed to escape without contributing anything like a fair share towards the public imposts. He would ask them to suppose the case of two young men, each of whom had been left a thousand pounds. One of them sinks his £1,000 in stocking and cultivating a farm, and the other in shipping. The latter sends his ships to sea; he engages the best men he can find in the port—the bone and sinew of the country—and for years, perhaps, he had the benefit of these able seamen. At length one of these men accidentally falls overboard and is drowned. What happens then? Why the first thing after the body is found is that it is visited by one of the gentlemen in blue, and he says there must be an inquest. The coroner is accordingly summoned, and the inquest duly held. But who paid the coroner and supported the gentleman in blue? The ship-owner? Nothing of the kind. It was the clergyman, the yeoman, and the tenant-farmer. What followed next? The poor drowned sailor has left a wife and family, and these have to be maintained out of the rates. Did the ship-owner do this? No. As he had escaped paying one penny towards the coroner and the police-constable, so he was not called upon to contribute towards the maintenance of the widow and children. He thought it was their duty to demand that such a state of things should no longer be permitted, and that there should be a revision of taxation, so that all kinds of property should be made to bear a fair proportion of the public burdens. Another matter to which he wished to refer, because he considered it to be very unfair, was the exemption from rating of all woods and plantations. This was one of the matters that ought to engage their attention. No doubt, woods and plantations were originally exempted from taxation centuries ago, with the view of encouraging the growth of timber for our navy; but that necessity no longer existed; and he considered that now it was only fair that woods and plantations should be rated. He must also say that he did not see any reason why landholders should not likewise be rated. Were not the police force established as much for the protection of landholders and capitalists, and the services of coroners to be afforded them as much, as those who had to bear the burden of maintaining them? If that was so, and no one would venture to question it, it was only just that those who participated in the benefit should bear a fair share of the expense. The population of England had nearly doubled during the last thirty years, and seeing the great interests that had sprung up in recent years, and the immense wealth of the country, he thought that as a matter of justice the general system of rating should be fixed on a different basis to what it was when the rating principle was first applied. They found that whereas three hundred millions of property paid to the income-

tax, only one hundred millions paid local rates; and if they could get the rating fixed on a fair and equitable basis, clergy, yeomen, and tenant-farmers would be considerably relieved. As agriculturists had no peculiar privileges, they ought to bear no peculiar burdens. There was something more looming in the distance. There was a disposition to throw the cost of the turnpikes upon the rates, but these roads were made for imperial purposes, and they should be paid for accordingly, and not by the occupiers of the soil.

Mr. R. OLVER had been sorry to see the way in which the chairman had been treated that day, and he must say, as a member of the club, it was hardly like Wadebridge men. The great complaint had been the increase of the salary. He had been present at the discussion of the subject, and thought that the magistrates who voted with Mr. Kendall were quite as much to blame as he was; for he, as chairman of the gaol-committee, was in some sort in duty bound to bring the motion forward. He could not understand how the governor's duty had been increased by the shutting up of the small gaols, as all serious cases were sent before the amalgamation to the assizes for trial. He also thought that the argument in favour of the hundred pound increase, that it was to be final, was a very weak one. He thought that some deference ought to have been paid by the magistrates to the opinions of the ratepayers, though he was aware that the latter had now no power. The result had shown them that it was no use appealing to the magistrates again, and they felt that they had been made to look very small. The magistrates were not the representatives of the ratepayers, and notwithstanding any agitation that might be got up on any matter, they acted just as they thought proper. He must say that to him it appeared that many of the magistrates had voted for the increase to Captain Colvill, just to show how little they cared for those "pettifogging" farmers and busy meddling guardians. He thought the only remedy to which they could look was the establishment of county financial boards, which he believed would follow the Reform Bill. He did not believe they would now have the burden of the county police if these boards had been established.

Mr. TREGASKIS thought that it was high time that they should be up and doing as a county in their present condition, and there was no better argument to be found in favour of financial boards than the manner in which the increase of Captain Colvill's salary had been effected, against what he might call the unanimous wish of the county. Three gentlemen had most ably and clearly pointed out that legally, morally, and equitably, Captain Colvill had no right to an increase of a hundred pounds (applause). The present manner of spending the county money was not at all satisfactory.

Mr. STEPHENS pointed out as an injustice that the late governor was superannuated on two hundred pounds, and was perfectly healthy and strong, able to take little petty salaries, whilst they were paying a full salary to another governor. He failed to see any justice in that to the poor hard-working ratepayer.

Mr. WESLEY GROSE thought the maintenance of the turnpikes should not be thrown upon the parishes, but upon districts or the county rates. He wished to call attention to the question of game preserves. He was not opposed to the game-laws, but believed that whenever an estate was stocked, whether with game or cattle, it should be rated up to its full value.

The CHAIRMAN agreed with all that Mr. Pollard had said with regard to the payment of rates and local taxation. If they felt they were unjustly treated they were quite right in endeavouring to get relief. He did not know whether they would save one farthing by county financial boards, but he knew that to make them happy and contented they were most desirable. The last thing he did before he left Parliament was to go to one of her Majesty's Ministers and say that nothing would be more pleasing to the united yeomanry and tantry than having financial boards. That gentleman's answer was that in the end the rates came out of the landlords' pockets

He (Mr. Kendall) replied that that was all very well if a tenant could calculate beforehand what the rates would be: he could then offer his rent accordingly; but when unexpected taxes were put on after the agreements were made, it was quite a different thing. There was the police-rate for instance. He must, however, give them one bit of advice: Church-rates might have been taken away many years ago if they would have been content with a moderate measure—a measure that did not give the Dissenter power to interfere where he paid no rate. So here they should not ask too much. He did not think there would be the slightest difficulty in getting an act passed for the establishment of county financial boards if they did not strive for mastery. If they went in for a bill for mastery, he did not think they could get it. (A Voice: "The

day is past now—the magistrates must be elected.") Well, they were powerful, but let them not mistake their power. All he had at heart was the interest of the county. Mr. Kendall then proceeded to refer to the question of Captain Colvill's salary at some length.

The discussion was continued for some time in a noisy spirit, the feeling of the meeting being evidently very strong against the increase of the governor's salary, and in favour of financial boards; and at times the demonstrations were very strong, Mr. Kendall coming in for not a little hissing, and the other speakers for enthusiastic cheers, according to the sentiments expressed. The meeting did not conclude till some time after the reporters were compelled to leave to return home.—*The West Briton.*

A BOARD OF AGRICULTURE.

At the Meeting of the Lincoln Chamber of Agriculture, Mr. RANDALL moved, pursuant to notice, that a petition be sent to the House of Commons for the establishment of a Board of Agriculture. He said: I have great faith in the general working of these Chambers of Agriculture, and I would cherish the hope, nay, rather the belief, that the particular motion which I am about to bring under your notice will meet with the concurrence, not only of our own Chamber, but also of the other Chambers, which are, or may be, at work in this country. It will be allowed at once to be of special and paramount importance that our early appeals to the Legislature should carry with them convincing proofs of that harmonious action which characterises the proceedings of men who are conscious that they are aiming at that which is only fair and reasonable in itself, and who therefore have made up their minds to test the strength of a right thing. Most desirable, then, is it to take heed that in our first attempts to make an impression on Parliament we should be careful to deal with matters not only grave and weighty in themselves, but such also as we feel assured will command the sanction and aid of all those who are seeking, through the instrumentality of these Chambers, to establish that legitimate influence in the councils of the nation, which is undoubtedly the birthright of the agricultural cause. And I cannot but think that one of these measures presents itself in the adoption of a petition, compliance with which would give the agriculturists of this kingdom at once a distinct and positive footing in the House of Commons. Looking at the stake vested in agriculture and its adjuncts, a stake represented by hundreds of millions, I am bound to say that we have a case grave and weighty, a case which our agricultural friends here, there, and elsewhere may take up with unanimity; a case which, backed up by its own merits and by the sturdy resolution of men who are not in the habit of banding themselves together for visionary purposes, must make its way to the serious consideration of those whose acknowledged business it is to look after the general interests of the country. Trade has its department in the Government—its minister. Be it so, the thing is right, and linked as it is by the closest possible ties to agriculture, will not the trade of this kingdom lift up its voice and say, Let it be so, the thing is right, let Agriculture have its board and its minister. I beg leave to propose that we forward to the House of Commons a petition for the establishment of a Board of Agriculture.

Mr. HOWARD begged to second the proposition. He thought Mr. Randall's motion was a very good one indeed. As far as he had heard from persons in the country, since notice of the motion had been given, they were all of one mind. They all thought that the establishment of a Board of Agriculture would be a very good thing for the country (Hear, hear). They all knew that at the time of the cattle plague a great deal of imperfect information was received, and acted upon, for want of the proper means of dealing with the matter, and he thought this formation of the Board of Agriculture would supply the deficiency and be beneficial to agriculture generally (cheers). He therefore begged to second Mr. Randall's motion.

Mr. STANHOPE, M.P., suggested that the petition would be more likely to be successful if its object were to obtain a sub-

ordinate department under the Board of Trade to deal with agricultural matters. The appointment of a Board of Agriculture, to be presided over by a new minister, would be attended with such great expense that it was very improbable Parliament would agree to it.

Lord MONSON quite agreed with the hon. member who had just sat down. He was quite sure from his experience in Parliament that it would be quite impossible to induce Parliament to create a new Board with all the officers attached, but he felt with Mr. Randall that there should be some officer to preside over agricultural matters.

Mr. RANDALL observed that perhaps the best plan would be for him to read the petition he had prepared, and then it would be open for correction.

Mr. RANDALL then read the petition.

Mr. STANHOPE said they could not disguise the importance of railways, but there was no minister for railways. They were presided over by the Board of Trade, and all they wanted for Agriculture was that there should be a special department either under the Board of Trade, or under the Council presided over by an officer responsible to the Government, whom they could always apply to for the purpose of agriculture.

The CHAIRMAN said he had no faith in Government legislation, especially for agriculture. It was all very well for persons out of office to lay traps and lead them to suppose that if they were in power they would do great things, but when they had the duties and responsibilities of office—the bitters as well as the sweets—it was astonishing what a change came over their minds, perfectly astonishing. But he would go further, and say he did not expect special legislation for agriculture; he did not want it. He thought if Parliament would let them alone, that would be the most beneficial to the agriculturists. But at the same time he did not think that, as they were unlikely to get any special legislation for the benefit of agriculture, they should submit to any special burdens. They were weighted enough already; they had all the world to compete with, and if any special board of agriculture would prevent any additional burdens being imposed, he said by all means let them have such a board.

Mr. RANDALL said the remarks which had been made by the Chairman justified him in proceeding with the motion. He thought it very desirable that they should have a representative in the Government—a minister of Agriculture.

Lord MONSON understood Mr. Randall to mean that there should be some particular official in the Government to whom they could apply for the purposes of agriculture (Hear, hear from Mr. Randall). Would not that be met by the appointment of an officer not being a Minister.

Mr. MARTIN suggested that the best plan would be for Mr. Randall to bring his proposition before the Central Chamber of Agriculture.

The CHAIRMAN: We are perfectly competent to entertain it here.

Mr. MARTIN: Certainly, but I should like to have the opinion of the Central Chamber.

Mr. RANDALL said he had altered his petition, which now read as follows;

"To the Honourable the House of Commons in Parliament assembled."

"The humble petition of the undersigned sheweth, That having regard on the one hand to the vital importance of agriculture to the community, and on the other to the amount of capital invested in the enterprize within the kingdom, your memorialists respectfully submit that the cause of agriculture is in every respect worthy of the countenance and general support of the Legislature of this country, and particularly of direct representation in a Government department. Your memorialists would therefore humbly and earnestly impress upon your honourable House the propriety and justice of establishing a special department for agriculture under the Board of Trade, to be presided over by an officer responsible to the Board of Trade.

"Your memorialists, while influenced by the consideration that agriculture, trade, and commerce have at least an equal claim to the recognition of your honourable House, are conscious that in this their petition they are only asking for an extension of the principle already acknowledged in the formation of a Board of Trade."

Mr. STANHOPE asked whether that was a petition to the House of Commons?

Mr. RANDALL replied in the affirmative.

Mr. STANHOPE said he would suggest that there should also be a petition to the same effect to Government. He should be very happy to present it, and he thought there would then be a greater likelihood of some result from it. The petition seemed so sensible and practical that he should like to assist them.

The CHAIRMAN said he would put the motion, for the peti-

tion seemed now to be in a form in which it would have great weight (cheers).

The motion was carried unanimously.

Mr. HEANLEY thought they should have some machinery connected with the Chamber of Agriculture, so that they could get petitions signed in every parish in the county.

Mr. ANDREWS (secretary) suggested that the proper way would be to send petitions to every member of the Council, with a request to get them signed as numerously as possible. The members of the Council were selected from all parts of the county, and if every one who had got a petition signed would send it to him, he would cut off the heads, and paste all the sheets together, and forward one large petition.

Mr. MARTIN thought it would be better to have a number of petitions than one large one.

Mr. KIRKHAM suggested that what was required was combination. This petition should emanate from the Central Chamber in London. If Lincolnshire sent Mr. Randall's petition, Leicestershire one for something else, and Derbyshire for another measure, they would have no weight whatever (Hear).

Mr. RANDALL contended that the proceedings of the Provincial Chambers should in a great measure guide the Central Chamber. If they passed a petition of this sort the next thing should be to send copies of it to other chambers, and let them send petitions also to the Central Chamber. They were not always to wait for the Central Chamber: let them think for themselves.

Lord MONSON doubted the advisability of hawking petitions. He thought a petition came with a greater force when passed at a large meeting, held on a particular day, and signed by the chairman.

THE WINTER MANAGEMENT OF FOLDYARD MANURE.

The management and application of farmyard manure is one of the most important business transactions of the farm in the winter season. Every intelligent farmer is anxious to convert the straw produce of his farm into valuable manure. To do this properly requires correct judgment and a liberal expenditure. Rotted straw is not valuable. It is simply decayed vegetation, and if so applied to the soil the return will be very meagre; but if it is judiciously dealt out for the consumption and lairage of farm stock, along with a liberal allowance of highly nutritious foods, it becomes a manure of great value. I shall therefore first treat of the best modes of making this valuable manure.

The Fold-yards.—These yards should be provided with convenient and suitable shelters or hovels, and be enclosed by walls or fences, capable of resisting the winds and weather. The hovels and other buildings surrounding these yards should all be spouted, as too much rain upon manure in course of making takes off by subsequent evaporation much of the ammoniacal properties most requisite to be retained. The bottom of the yards should be a sound subsoil; so that the liquid manure does not drain away. If the subsoil is porous, it is desirable to lead a quantity of soil into the yards to form the foundation upon which to make the manure, and to be let out with it. Convenient moveable cribs should be provided. Fixed cribs or mangers are dangerous as cattle cribs. One square moveable crib will suffice for three or four cattle. Well supplied water-troughs must be provided. Some of our domestic animals are so well adapted for making manure as cattle; and, in stocking the yards, much will depend upon the size of the cattle compared with the area of the yard. For fattening cattle, small yards, and a limited number of cattle therein, is desirable. For store cattle, the size of the yards is almost immaterial, and the number of animals may be proportionately increased. Young cattle ought at all times during winter to be housed. The horse-yards should be rather small, and

well sheltered. Fixed mangers may, without much danger, be adopted for the horse-yards. For the most part farm-horses are best in stable, or under hovels, the manure being daily taken out; but this is impracticable on many farms; consequently, their yards should be made as suitable as possible for them. Young horses and foals are usually wintered in foldyards; and, as their food is good, they make good manure. Some consideration is necessary relative to the strawly foundations of these yards. My own practice is to lead into them, in the late autumn, the ditch-roadings of the farm, the trimmings from stack thatchings, and any rubbish and litter to be found, and occasionally the pickings from the land in autumn-culture. These deposits, i. e., of bean-haulm, potato-tops, ditch roadings, and root-pickings, form a good foundation, upon which to commence the straw-feeding and lairage of the various kinds of farm stock. In some districts it is customary to stock foldyards with sheep; and much capital manure a flock of sheep will make. My own experience, from repeated trials, is that sheep require plenty of room, abundance of lairage, great variety of food, frequent feedings, and occasional airings in the fields.

The straw produce of the majority of farms is, as a whole, of similar quality. Upon some farms it will consist of wheat, oat, bean, and pea straw or haulm; upon others, wheat and barley straw; upon others, wheat and bean chiefly. For our purpose, this is comparatively immaterial. We only wish to show that as much of it as possible should be consumed by the farm stock, independently of the grass and clover-hay commonly grown upon every farm. It has now become the universal practice to mow or cut-up from the very bottom all our corn and pulse crops. This is of immense advantage in making larger quantities of farm-yard manure, inasmuch as the stubble formerly left in the field to die and decay is brought into the yard as mown corn, to be stacked and thatched safely down, and then used in its best strawy state for fodder and litter, none being dissipated in the air.

In dealing out straw for the service of the farm-stock much care should be observed. Animals thrive best under a change or regimen of food; hence it is very desirable to supply them with straw in variety, so that they may not be kept to any one sort too long, as bean or pea haulm for instance, which would be highly injurious to cattle; but when given along with white straw, it makes a salutary change; besides, this intermixture in the fold-yard is advantageous. The older the cattle, the richer the food, the better the manure. These are truisms; therefore the best course, to make the best manure, is to provide for the fold-yard fattening cattle to be supplied with very liberal rations of roots and cake or corn, with straw *ad libitum*; but not too profusely. The better every other animal in the yards are kept, the better the manure. The littering for lairage should be regular, and according to requirement—no more.

Many farmers object to pigs in a fold-yard, under the impression that by frequently turning over the strawy manure in search of grain, corn, &c., they liberate much of the ammoniacal properties imbibed by the straw. This may be so, but they by this turning also promote fermentation, which is desirable. In some districts it is customary to mix extraneous "matters" or substances with

the strawy manure in the fold-yard; shell-fish, i. e., mussels, seaweed, common earthy loam, ashes, street sweepings, ditch cleanings, and roadings, salt peat, fern, weeds, indeed almost anything and everything that will add to the bulk without injuring the quality. Ashes, loam, and peat are highly useful to concentrate and fix the ammonia. Salt is very efficacious in a dry season. The manure accruing from the stables and piggeries is always of a hotter and more acrid character than common fold-yard dung, and should, if readily practicable, be mixed with it in the yard. It is one of the most common operations in farm practice to lead out manure from the fold-yard, not only to form a compost heap, but solely to make a manure-heap for convenience upon a part of the farm where it is to be used the following season. It may be right in aid of a compost heap, but it is absolute waste to decompose it in a heap, far better for it to remain as one compact mass in the fold-yard till near the time it is likely to be required, when it should be turned over and used in its highest state of fermentation, and covered over by the plough as soon as deposited. The manure from the stables and piggeries does not require turning, it is generally in a state of high fermentation if in any bulk, and may be used at any time.

THE FRENCH EXHIBITION. AWARD OF PRIZES

TO THE EXHIBITORS OF AGRICULTURAL AND HORTICULTURAL MACHINERY.

[Translated from the French of the *Moniteur*, of the 6th Jan., 1868.]

The distribution took place at the Palace of the Tuilleries in presence of the Emperor, who, after the Report had been read, addressed the meeting as follows:—

"GENTLEMEN,—The success of the Universal Exhibition has made it a difficult task for my Government to reward all the meritorious exhibitors, who are so numerous and diversified. We have been compelled to make a selection amongst the best—an operation always delicate and unsatisfactory. On this occasion I have wished to distribute the awards granted by the Jury, and to give the decoration of the Legion of Honour to those persons who have most excelled in agriculture as in manual labour; and amongst the delegates of the working classes to those who have the most distinguished themselves.

"I hope that these encouragements will bear their fruits—that agriculture and manufactures will continue their ascendant progress—that those who labour to fertilize the earth and to transform its materials will see that it is their task to improve themselves, and that France, enriched by their efforts, will continue to take her position in the paths of progress and civilization."

After these words, received with enthusiastic acclamation, His Excellency the Minister of State, Vice-president of the Imperial Commission, proclaimed in the following order the names of the exhibitors who had obtained grand prizes, medals of gold with objects of art, and medals of gold only:—

GROUP 8.—AGRICULTURE.

GRAND PRIZE, WITH OBJECT OF ART of the value of 10,000 francs.

FRANCE.—M. Decrombecque, of Lens, farmer.

GRAND PRIZE.

H.M. the Emperor of Austria: Encouragement to Agriculture.

RUSSIA.—H.M. the Emperor of Russia: Improvement in the breed of horses (a portion of the Grand Prize awarded on the 1st of July).

FRANCE.—H.M. the Emperor of the French: Encouragement to Agriculture, and improvement of the Merino breed.

Messrs. Charles Henri Schattenmann, of Bouxwiller, farmer. Fievet, of Mauny, farmer. Bignon, sen., of Therville, for agricultural improvements; rearing the Charollaise breed.

UNITED STATES.—Mr. C. H. Mac Cormick, of Chicago, a reaping machine.

GREAT BRITAIN.—Messrs. Ransomes and Sims, of Ipswich, agricultural machines. James and Frederick Howard, of Bedford, agricultural machines. Clements R. Markham, of London, introduction and cultivation of Quinquina into British India.

ITALY.—Prince Alexander Torlonia, of Avezzano, drainage of the Lake Fucino.

GOLD MEDALS, WITH WORKS OF ART.

FRANCE.—Messrs. Hary, of Oisy-le-Verger, farmer. H. Champomaz, of Paris, apparatus of agricultural distilleries. Count de Kergolay, Canisy, farmer. Celestine Gerard, Versois, thrashing machines and locomotives. J. Pinet the younger, of Abilly, thrashing machines and horse training. Ch. de Meixmoron de Dombasle and Noel, of Nancy, for aratory implements. Peltier, jun., Paris, agricultural machines and implements. Eugene Tisserand, of Paris, formation of agricultural domains. Chevandier de Valdrome, of Cirey, agriculturalist and agriculturalist. Chamber of Commerce of Lille, creation of a special market for flax manufactures. Delaville, of Breteville-sur-Odon, stallions for the yoke and draught. Mariem, of Blainville, stallions and mares for the yoke. Charlier, of Paris, a new system (*periplastique*) of shoeing. Vicomte Paul Benoit d'Asy, of Saint-Benoit-d'Asy, breeding of animals of the butchery. Lacour, of St. Fargeau, breeding of animals of the butchery. Lacharme, of Sernage, application of selection to the Morvan breed. Her Highness the Princess Baciocchi, of Korn-er-Houët, rearing of the Bretonne and Ayr breeds. Ferdinand Suif, of the Pavillon, application of selection in the Charollaise breed. François Vachon, of Têches and Beaulieu, application of selection to the Jura breed. Teissereux de Bert, of the Chateau de Bert, application of selection to the Limousine breed. Saint-Avit Davigneau, of the Marais, application of selection to the Garonnaise breed. Hilaire Garnot, of Villaroche, rearing the Dutch breed. Fluchet, of Trappes, Dishley Merino Sheep (race la Trappe). De Bahague, of Dam pierre, the Southdown breed. Jannot-Cotton, of Chatillon-sur-Seine, Merinos not trimmed. Montnot-Bonn, of Neale, Merinos not trimmed. Gilbert, of Widenville, Merinos trimmed. Cugnot, of La Douzière, Merinos trimmed.

UNITED STATES.—Mr. Walter A. Wood, of Hooick Falls, a mowing machine.

UNITED KINGDOM.—Messrs. Garrett and Sons, Leicester, agricultural machines. Smith and Sons, Penzance, corn drills.

GOLD MEDALS.

H.M. the Emperor of Russia.

H.M. the Emperor of Morocco.

H.M. the Viceroy of Egypt.

H.M. the Dey of Tunis.

FRANCE.—Messrs. Vallerand, Damey, Delahaye-Tailleux, Theophile Gautreau, the Society of United Cellars of Roquefort, Haussmann, T. J. M. Bertrand, sen. (for scales), Silger, Samain, Mabilhe Brothers, Moreau-Chaumier, Fusellier, Bignon sen., de Saint-Romas, de Lapparent, Blanchard and Chateau, Castillon, Baron de Fourment, Jacques Turpaud, E. Mansoy and Co., Dassoille-Guyot, Hélon de la Romagère, de Bebagne, Count de Kergorlay, Foulhiade, Pilot, Charles Durand, jun., Armand Puntoux, Louis Deleclerc, de Montgermont, the Marquis d'Havrincourt, General de Solliers, Quittard, Labitte Brothers, Vasseur, Nolette-Delorme, Germain-Garnot, Rouhier-Chassencot, Achille Maître, Noblet, Lemoine, Vuarfart-Oudin, the Widow Guerin-Manceau, Rabier, Conteau, Louis Gras, the Widow Paul Malingle, Maisonneuve, Staniels Paillart, Paquet, Felix Durand, Charles Simier, Madame Ide-Josse Rousset, Giot sen., de la Besge, Andingier, Napoleon Dora, J. B. Dufour, Camille Personnat, Bettandier, Charles, Chaillet and Sarah Felix, Samuel Chastan, Carbonnier, Guille, Le Grix, Monnier, Auguste Dameril.

AUSTRIA.—Doctor Arenstein.

BELGIUM.—M. Billefroid.

PONTIFICAL STATES.—Mr. Henry Bermond.

GREAT BRITAIN.—Messrs. Marshall, Sons, and Co.; Pickley, Sims, and Co.; James Jamieson, James Cooper.

GRAND DUCHY OF BADEN.—Doctor Ran.

ITALY.—Messrs. the Chevalier Michel del Prino, Count Auguste de Gori-Pannilini.

NORWAY.—M. Rasch.

HOLLAND.—The Agricultural Society of Holland, Messrs. A. Haskari, G. de Seriere.

PRUSSIA.—Messrs. Werner, de Chlapowski, Count de Mielitzki.

ROMANIA.—Messrs. Prince Alexander Morousy Sworechczano, Prince Barbon Stirbey.

RUSSIA.—Messrs. Vbranowski, Prince Roman Damien Sengouchko, Botkine, Kounzetsoff.

SWITZERLAND.—M. Schumacher.

GROUP 9.—HORTICULTURE.

GRAND PRIZE, WITH OBJECT OF ART.

BELGIUM.—J. J. Linden, of Brussels, for the introduction of new and hothouse plants.

GRAND PRIZES.

FRANCE.—Messrs. Vilmerin-Andrieux and Co., Paris, for ornamental plants in the open ground. The Marsh Gardeners' Mutual Aid Society of the Department of the Seine, Paris, leguminous plants. A. Chantin, Paris, hothouse plants.

GREAT BRITAIN.—Messrs. J. Veitch and Son, London, introduction of new ornamental and coniferous plants.

GOLD MEDALS, WITH OBJECTS OF ART.

FRANCE.—Messrs. H. Jamain, Paris, roses. Margottin, of Bourg-la-Reine, roses. Croux and Sons, Aulnay-les-Seaux, trees and fruits. Jamin and Durand, Bourg-la-Reine, trees and fruit. J. Marcon, of Lamothe-Monttravel and Saint-Emilion, vine culture. Cochet, of Suisses, conifers, roses, ornamental trees, and fruit trees. Desseine, of Bougival, conifers, fruit and ornamental trees. Oudin, sen., of Lilioux, conifers, fruit and ornamental trees. Thibaut and Keteleer, of Soeux, hothouse plants. Guibert, Paris, orchids. Count de Nadailac, Paris, orchids.

GOLD MEDALS.

FRANCE.—Messrs. P. M. Dormois, Bernard, A. Dufoy, Gauthier-Dubois, Lierval, Loise-Chauviere, Souchet, Van-Aquer, Horticultural Society of Clermont (Oise), Oremont Brothers, Remont, L. F. Gontier, D. Chevalier, Constant Charmoux, Rose Charmoux, L. Cirjean, Crapotte, Alexis Lepere, L. Lherault, Rollet, Viscount de Saint-Trivier, Forest, Bea, Fr. Cels, E. Chester the younger, G. Laddemann, Pfersdorf.

BELGIUM.—Madame Legrelle d'Hanis; Messrs. A. Verschaffelt, Gustave Wallis.

HOLLAND.—Messrs. C. H. Kreisge and Son.

SWEDEN.—Horticultural Society of Stockholm.

His Excellency the Minister of State afterwards called forward those persons nominated or promoted to the Order of the Legion of Honour, who received the insignia of the Order from the hands of the Emperor (see the subsequent decrees.)

His Majesty, on quitting the Field Marshals' Hall, addressed the exhibitors by whom he was surrounded, in terms of congratulation.

By decrees of the 29th December, 1867, issued on the proposition of the Minister of State, the Minister of Agriculture, Commerce, and Public Works, the Minister of the House of the Emperor and of the Fine Arts, Vice-Presidents of the Imperial Commission of the Universal Exhibition have been promoted or nominated in the Imperial Order of the Legion of Honour.

TO THE RANK OF OFFICER.

Messrs. Decrombecque, agriculturist, of Lens (Pas-de-Calais); Knight of the 7th Nov., 1849.

Boitel (Louis-Amedee), Inspector-General of Agriculture; Knight of the 6th Aug., 1867.

Hardy, sen., author of estimable works on arboriculture; Knight since 1813.

Dupont (Paul), Press Editor, Paris; Knight from 14th Aug., 1859.

TO THE RANK OF KNIGHT.

Messrs. Gilbert, sen., agriculturist, of Willeval (Seine-et-Oise).

Gerard (Celestin), mechanical constructor, Vierzon (Cher).

Damey (Alexis), mechanical constructor, Dole (Jura).

Garnot, agriculturist, Genouilly (Seine-et-Marne).

Charlier (Pierre), veterinary surgeon, Paris.

Prillieux (Edonard), Secretary of the Jury—Group 8.

Jourdiere (Auguste), Member of International Jury.

Chantin (Antoine), horticulturist, Paris.

Jamain (Eugene-Hippolyte), horticulturist, Paris.

Hortoles, Member of the International Jury.

Hirn (C. F.), constructor of engines, Logelbach (Haut-Rhin).

Benoist-Champy (Gabriel), President of the Committee of Experiments of Salvage and Navigation at the Universal Exhibition.

Monduit (Honoré-Louis), manager of lead works of art, Paris.

Alexandre (Felix-Victor), delegate to the working clockmakers.

Mollet, president of the operatives' delegations.

Barbier (Leon), delegate for the operative timmen.

By a decree dated 4th February proximo (1868), issued on the proposition of the Minister of State, the Minister of Agriculture, Commerce, and Public Works, the Minister of the House of the Emperor and the Fine Arts, the Vice-Presidents of the Imperial Commission of the Universal Exhibition, and the Minister of Foreign Affairs, the following persons have been promoted or nominated in the Imperial Order of the Legion of Honour:—

TO THE RANK OF COMMANDER.

The Count Henri Zichy, Privy Councillor, agriculturist, and exhibitor (Austria).

TO THE RANK OF OFFICER.

M. Ronnberg, Chief of Division to the Minister of the Interior, Organiser of the Agricultural and Horticultural Exhibition of Belgium, Knight of the Legion of Honour (Belgian).

M. de Kopteff, present Councillor of State, Russian Delegate for the Stud (Russia).

M. Mœder (Jean), present Councillor of State, Secretary of the Council of the Stud (Russia).

TO THE RANK OF KNIGHT.

M. Morren, Professor at the University of Liege, Member of the Jury (Belgium).

M. Wittmarck, Member of the International Jury of Agriculture (Prussia).

M. Meyer, architect and landscape painter (Prussia).

M. Aureliano, Director of the Agricultural School of Bucharest, Member of the Jury (Roumania).

Mr. Mac Cormick, of Chicago, inventor of a reaping machine, exhibitor (United States of America).

Mr. Wood, of Hooick Falls (State of New York), constructor of agricultural machines, exhibitor (U. States of America.)

A full report, translated from the *Moniteur*, appears of the prizes awarded in the agricultural and horticultural departments of the Paris Exhibition. In nice

keeping with the whole business, the telegram first announcing the chief premiums bestowed was curiously incorrect or incomplete. Thus, amongst the English makers the name of the firm of Messrs. Ransomes and Sims appeared as the only recipient of a grand prize; whereas Messrs. J. and F. Howard and Mr. Clements Markham also received grand prizes, and the daily papers of the following morning were of course under correction. Considering the way in which the trials or non-trials were conducted, and the manner in which the English were

edged out of any share in the proceedings, we are inclined to attach little or no importance whatever to the awards arrived at; but it is amusing to see that this great bungle from beginning to end is to be employed as another argument against the prize system! The main arguments, as we take it, should be against any more such International Exhibitions, or the folly of entrusting the care of an interest like Agriculture to people who know nothing about it. Whatever became of them, or whatever were the English commissioners for this section called upon to do?

CALENDAR OF AGRICULTURE.

The stubble lands intended for fallow crops are all ploughed in the winter furrow by the beginning of or early in this month, and also the grass leys for oats. These lands are much benefited by early ploughing, to be alternately contracted and expanded by the atmospheric actions of frosts and thaws, wet and cold, to produce an alluvial pulverization on the surface of the ground, the want of which no future cultivation is able to compensate.

The fine weather of this month will commence the labours of the year in sowing the first crops in the early climates of the southern latitude. Sow spring wheat on the strong turnip soils from which the crop has been removed, and on any clay fallows deferred from autumn. Sow early peas and beans, rye and spring vetches, in order to obtain an early use of that most invaluable plant, and for green food sown on leys or stubbles. Sow the seeds of cabbages on any corner of outer garden ground, rich in heart, for plants to be set in the fields in May or June.

Remove all turnips from the fields without delay. If frosts prevail, carry dung from the yards to the heaps in the fields, with earths, stones, and fuel, as may be required. Continue the thrashing of grains, as the straw is wanted, and sell and deliver the corn. Feed all animals, as has been directed—work-horses with hay, oats, and beans, with one evening meal of steamed meat; milch cows with hay and beet-root, partly steamed, with cabbages when grown on the farm: juicy food is required to secrete milk. Suckle extra-early calves for veal, and also for weaning, to produce some choice animals. Fattening pigs are fed with steamed potatoes, with meals of barley, oats, and beans, and raw grains in the last stage of fattening, to render the flesh firm and white. Poultry are served with the steamed food of potatoes, mashed with meals, or with light grains. The animals are carnivorous in a certain degree, and the formation of eggs is much promoted by flesh, minced and seasoned in mixture with the meals and potatoes. The lengthening days of the season demand a larger supply of food, and an increased attention to their wants.

The hardy varieties of turnips in store will now come into use for the cattle, as the green globes and the rounds of sorts. Oilcake may now be given to the fattening oxen, to finish the process of making beef, which it much hastens, and also improves the quality of the dung. Break or bruise the cake, and place it in troughs for all animals. Oats and salt are beneficially used with it.

The store sheep are run upon leys, and have turnips with chaffs of hay and straw, some little cake and salt, along with oats. The critical season now commences for keeping animals in an advancing condition without any retrogression, a point of much value and attention. The ewes and lambs demand the utmost care that can be bestowed on their situation, an ample supply of juicy food in swedes, cabbage, and beet-root, relieved with dry meat in chaffs and oats occasionally. Feed and shelter the mother, and she will feed the young.

Lay dung on grass lands, when dry. Bush harrow and roll, and pick off by hand all rubbish. Spread molehills and tufts of dung, and put gates and fences in order. Flood watered meadows.

Dig hop grounds, open the hills, and apply strong manures, as the best rotten farm-yard dung, rags, composts of lime and salt, brines, and any oleaginous substances. Dress the roots of the plants, and cut off the shoots for sets in a bed to rear them into use for being planted.

During the whole month, fell timber and cut underwoods; plash hedges, and raise new ones, during moist weather, for planting; and during that season only, plant all kinds of useful forest trees, as oak, ash, elms, and larch. Set osiers in beds, and in various low damp grounds. Lay the beds dry by open dividing drains, and dry the ground one year before planting. Open ditch plantations of trees, and fence the inclosures against trespass by grazing animals.

Never cease to collect manures of every kind, and in every shape or form. Earthy matters, mixed with decaying vegetable substances, will never in any case disappoint the farmer; a compost heap for the reception of all such articles is a most indispensable requisite on every farm, be it large or small in extent.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

The first month of spring introduces the labours of the year, and commences the sowing of crops

on the early warm lands of southern climates. The weather may be fitful in changes of cold and wet; but the fine intervals will generally allow the in-

section of the early crops, with the operations of the spade and the fork in making other provisions. Showers of hail or snow are soon stopped in effect by the powers of the returning sun. On lands duly prepared in autumn, as has been directed, sow peas, beans, carrots, onions, parsnips, and beet-root: all these crops in single rows, only the onion may be in broadcast, and dunged with night-soil, or other minute excrements. The other plants are better provided with rich lands by the former crops than with fresh dung to themselves—beet excepted. The autumnal manuring is ever to be preferred, both for effect in the soil and furtherance in the spring.

Asparagus plots should be particularly attended to. There is nothing wonderful in the enormous size of this vegetable, as is so often heard and read of. Give the plants the advantages of adequate means, and the farmer's garden may vie with any market in the kingdom. To make a proper bed, a degree of preparation must be adopted, somewhat similar to the following description: This is a crop that ought to yield an abundant supply during twenty years; therefore, as much is expected from it, the foundation should be in proportion strong and generous. Not fewer than four double row beds should be provided for; and as the rows of plants must be 12 inches asunder, with an allowance of an equal space on each outer side of the rows, the beds will be three yards wide. Besides the beds, there must be an alley between them, and one at both remote ends; thus the entire space required will be seventeen or eighteen feet, the length of the rows being arbitrary.

The whole of this ground is to be dugged out trench by trench, three feet deep, and good drainage secured. If the mould be naturally rich and nutritious it may be all employed. A bad subsoil must be removed, and its volume restored by sound turfy loam introduced: with the earth a third part, bulk for bulk, of the best farm-yard dung should be completely incorporated. It would not be amiss to add a bushel of bone-dust or guano, which comprises much of that substance, with some salt, sulphate of ammonia, and perhaps chalk. The materials being duly blended and deposited, the beds will be found to stand high above the ground level, and they may be left to settle till Lady-day.

A similar preparation would be desirable for sea-kale, artichokes, and rhubarb—all of these would remain richly fertile during several years.

Sow twice, or oftener, spring spinach, lettuce, salads, radish, and at the end of the month carrots, onions, leeks, and some early cabbage.

Parley: Sow a full crop, either in beds or in edgings: it lasts two years well; but a new sowing ought always to be made annually. Among the best fancy plants that are yet raised in good gardens there may be named salsafy, borage, lovage, burnet, coriander, and chervil—all are sown late in the month; also the sweet herbs thyme, hyssop, marjoram, and savory.

Prepare good loamy soil for garlic and shallots.

FRUIT DEPARTMENT.

Gooseberries and currants: Proceed forthwith with the pruning, for the buds will be breaking.

Retain a good supply of the best-placed young wood of the former, spurring but little. Currants require rigid spurring to produce the fruits in closer clusters. Retain about six canes to each raspberry bush; cut these back to the bud just under the part where the cane takes a bend; then collect, and tie them neatly at the summits. Mulch over the grounds about the plants; but need not be dug, although the wandering suckers may be removed.

After this necessary work, prune the wall fruit trees, as has been directed, and finish with pears and apple espaliers, and all the spur-bearing fruit trees.

Strawberries: Beds and borders may now be planted. Deep new ground is essential, and the best kinds are the "Keen's" for an early, prolific crop; the Queen's" for mediums; and the delicious "Elton's" for the latest supply.

FLOWER GARDEN.

Sow annual seeds of the best sorts in pots or pans about the end of the month. Rich, light, loam leaf-mould, or very old cow-dung, forms a good compost: a very gentle heat in a frame will be useful. The common hardier sorts are raised under a glass in the same way: such are—convolvulus, lupines, sweet peas (the last best raised in rows in autumn), navelwort, and Venus' looking-glass, dwarf lychnis, candy-tuft, &c. In the open ground worms, snails, and slugs too frequently destroy the plants as they emerge.

In the end of the month, if dry weather, a dressing of old cow-dung and leaf soil may be pointed in, over all the flower beds, or more effectually by renewing the beds a foot deep with light loam, leaf soil, and heath mould, as nothing can exceed the virgin earth of that kind when good in quality.

Hot beds of dung and leaves, or of leaves only, collected from woods, or from the rakings of parks, will contain much withered grass, and ought to be prepared for raising cucumbers and melons, or any forcing purposes, and for obtaining early asparagus and potatoes. No time or material is thus uselessly wasted, even upon the busiest farm, inasmuch as two objects are attained: first, the preparation of much manure; and, second, the early production of excellent vegetables and fruit, not to be procured by any other means.

DEATH OF MR. JOHN GREY, OF DILSTON.

We regret to record the death of this well-known and much-respected agriculturist, at Lipwood House, Northumberland, on Wednesday, January 22nd, at the ripe age of eighty-two. The following particulars of his career are taken from the *Newcastle Journal*: Mr. Grey was the eldest son of Mr. George Grey, of West Ord, near Berwick, by Mary, daughter of Mr. John Burn, of Berwick. He was born in 1735, and married in 1814 Hannah Eliza, daughter of Mr. Ralph Annett, of Alnwick. The family is descended from a common ancestor with the present Earl Grey, of Howick. In early life Mr. Grey farmed in North Northumberland, where his example, in conjunction with that of the Culleys, Smiths, Scotts, and other high-class farmers, created an entirely new system of agriculture. Fully imbued with the idea that great improvements might still be made in agricultural pursuits, Mr. Grey availed himself of every practical means to attain the end he aimed at. No

new machine, whereby economy in pursuing farming operations could be effected, but met with his warm approval and adaptation. When the Commissioners of Greenwich Hospital decided to remodel their system of management, many years ago, the large and important estates of the deluded and unfortunate Earl of Derwentwater, whose rent-roll forms so important an item in the revenue of that admirable national charity, the Government of the day selected Mr. Grey as the chief land agent of the estates for Northumberland. The late Earl Grey, a relative of the deceased, we believe, was mainly instrumental in obtaining for Mr. Grey this important and valuable appointment; and probably so far as the practical development of the resources of the estate is concerned, a better selection could not have been made. Shortly after Mr. Grey took up his abode in the halls of Dilton a new mansion was erected immediately adjoining the baronial halls of its once noble occupant. Mr. Grey was not long in commencing his system of improvements. Having carefully and thoroughly inspected all the farms on the estate, several of which are situated in the west part of the county, and many in Bamberghire and the north, he at once inaugurated a completely new system of agriculture, the persistent continuation of which has rendered all the farms to be looked upon almost as models of farming. While seeking to improve the income, he was not unmindful of the requirements of the tenants, but also took a deep interest in seeking to ameliorate the condition of the hinds and labourers engaged in farming pursuits. The comfortable farmhouse, the ample and commodious farm offices and buildings, and the neat and admirable cottages on all the farms, bespeak the care and anxiety Mr. Grey evinced towards all who were in any way connected with the estates under his management. Mr. Grey with that keen perception for which he was noted, at once

perceived the advantages to be derived from associations, set about and was instrumental in originating the Tyneside Agricultural Society, which for a long series of years has maintained a reputation second to none for the most excellent display of stock, farm produce, and implements, and still continues to hold its head as one of the best local societies extant. In addition to the agricultural society, chiefly through Mr. Grey's exertions, the Hexham Farmers' Club was called into existence. Possessed of a robust constitution, a strong and vigorous frame, Mr. Grey was capable of undergoing great fatigue but the great monetary panic, in 1857, when the Northumberland and Durham District Bank closed its doors, was, to use a common expression, "the first nail in his coffin." Being a large shareholder in that unfortunate concern, and having implicit faith in its management, he felt the catastrophe most keenly, not so much on his own account, but from the circumstance that his name and position might have induced others to invest their money and savings in it. He, however, honourably fulfilled all his engagements, but always looked back with regret upon the connection he had with the disastrous undertaking. Finding the infirmities of old age stealing upon him, a few years ago Mr. Grey relinquished his appointment, and retired to Lipwood House, near Haydon Bridge, to enjoy, in retirement and quiet, his remaining days. He was succeeded in the agency of the Greenwich Hospital estates by his son, Mr. C. G. Grey, who for many years was the agent of the Irish estates of the Earl of Derby. We need only add to this, that Mr. Grey was a capital judge of stock, and the author of a very excellent prize essay on the farming of Northumberland, which appeared in the *Journal of the Royal Agricultural Society*. He was present, and spoke at the last memorable meeting of the Hexham Farmers' Club in the week previous to his death.

FOREIGN AGRICULTURAL GOSSIP.

Our gossip is once more of a very miscellaneous and rambling character. The *Corps Législatif* has voted a new law on the army, by which the strength of its establishment is somewhat increased. This law is not altogether popular in the French country districts, the burdens of which are rather heavy. It seems difficult to exactly appreciate the necessity of maintaining a numerous army, when statesmen are proclaiming an era of universal peace; indeed, there are some who consider that the art of destroying men, which occupies so great a place in the existence of modern societies, is not a whit more respectable than the art of enabling them to sustain life, and that the considerable sums expended on armaments would be more usefully employed in works of public utility. Among these public works irrigation canals present a very urgent character, as regards the districts of the south of France. This is the subject of an interesting communication made to the Agricultural Society of the Drôme by the Marquis de Bimard, Vice-President of this association and President of the agricultural committee of Chabeuil. The Marquis examines successively the different modes of construction which might be adopted—viz., first, by a syndicate of the landed proprietors interested; secondly, by a financial company; and, thirdly, by a combination of the interested departments or communes with a company. All these three systems would, the Marquis considers, meet with well-nigh insuperable obstacles, and accordingly he falls back upon the aid of the State. He admits that the intervention of the State in agricultural affairs has its inconveniences; nevertheless, in this particular case, he believes that it is necessary to have recourse to it. Accordingly, he proposes that the State should make advances of funds and construct the canal, and that then it should establish an interest and redemption account, calculated so as to enable the persons using the canal to become proprietors of it within a certain period. The Marquis argues that in order to provide for the cost of the enterprise, the State has only to issue Treasury bonds, on the security of rents levied on the proprietors of the lands irrigated, and which might be collected like ordinary taxes.—The cattle plague continues to prevail in the province of Antwerp. Two cases have also been recently noted at Kiel, and it was deemed necessary to slaughter in consequence nine head of cattle. The

most severe surveillance continues to be exercised in Belgium and elsewhere.—An international exhibition of reaping and mowing machines is being arranged to take place at Berlin, through the medium of the Agricultural Society of Marc, Brandenburg, and Neiderlausitz. The programme appears to have been carefully prepared. The machines will be tested with a dynamometer, and they will work in an order to be decided by lot on parcels of land each about half-an-acre in extent, it being stipulated that the crops on these pieces of land shall be cut in less than an hour. The competitors are to be allowed to make trials of their machines beforehand, on land placed at their disposal. The machines which may be sold in Prussia will not pay customs duty.—The Caen Society of Agriculture and Commerce will hold, Feb. 14, a special exhibition of fat stock grazed in the department of the Calvados; fat fowls will also not be altogether overlooked. A gold medal will be awarded to the grazier who may present the finest collection of animals of every kind and of every breed.—The new French metropolitan cattle market of La Villette is rudely competing with the old Poissy market. In order to assure regular supplies to the latter, the municipality of Poissy has instituted prizes in favour of the persons who may have presented the greatest number of animals for sale from Jan. 1 to July 1, 1868. Thus three prizes, of £120, £80, and £40 each, will be offered to such persons as may have brought for sale within the period indicated the greatest number of beasts, provided always that the number is not less than 500, 400, and 300. Two prizes of £40 and £20 will be offered to such persons as may have brought forward the greatest number of sheep; and finally the prizes of £20 and £12 will be given to those showing the most calves. The municipal administration will remit these prizes to those entitled to them in the course of July, 1868.—In referring last week to the Imperial and Central Agricultural Society of France, we fell into an error which it is well to rectify: M. Huzart is not archives-secretary of the society, but its treasurer. Since we are referring to the Imperial and Central Agricultural Society of France, we may state that it has addressed a circular to all the agricultural committees in France, asking them to indicate the agriculturists whom they may deem suitable to contend for certain prizes which it pro-

poses to award. These prizes are presented for the following results: First, substitution of an alternate cropping for the croppings with biennial or triennial fallows which are adopted in the greater part of France; secondly, introduction into a locality where they do not yet exist of species or varieties of wheat more productive than the ordinary varieties of the district; thirdly, introduction into a French district of manures or amendments not previously in use, and improvements introduced into the preparation, conservation, and employment of manures; fourthly, increase in the number of cattle kept. —M. Thibierge, secretary of the Imperial Society of Arts and Agriculture in the Seine-et-Oise, has issued a programme of the competitions opened by the Society for 1868. The programme comprises—first, the multiplication and improvement of the cattle species; secondly, the multiplication and improvement of the horse species; and thirdly, the employment of the sewage of towns (with regard to this latter subject, the society will award in 1870 a gold medal of the value of £20 for the judicious employment of the manures of towns; the application of the manures is to last three years, dating from 1867, and must be made in each year on an extent of at least 20 acres). The society further offers a gold medal of the value of £12 for the best analysis of the land in cultivation in the département of the Seine-et-Oise, and a gold medal of the value of £12 for the best answer to the question whether it is useful to cross the Merino sheep breed with the Dishley breed, in order to obtain more precocious animals, better formed, and calculated to graze more rapidly, or whether it is possible by judicious couplings and an appropriate feeding to obtain as well-formed and as precocious animals. Finally, a gold medal of the value of £4 is offered by the society for a treatise on the diseases of cereals, the characteristics which distinguish them, the causes which produce them, and the means best calculated to prevent and combat them. The *mémoires* prepared on these interesting subjects are to be addressed before April 1, 1868, to M. Thibierge.—The deaths are announced of M. Auguste Picard,

formerly president of the Agricultural Society of the Vaucluse, and of M. Bélin, of Charvieux, laureat of the prize of honour of Leze in 1864.—Great misery is said to be prevailing just now in Algeria. The journals of the colony give shocking details of the state of the inhabitants whose crops were destroyed in 1866 by grasshoppers, while last year they were to some extent withered by extraordinary droughts; and as if two years of scarcity were not sufficient to fill up the colonial cup of woe, the settlements have been afflicted with the cholera, and also with an earthquake. The Arab population have been especially reduced by these horrors to a condition of heartrending distress.—It appears that the imports of wheat into France in the first eleven months of 1867 amounted to 4,080,315 quintals, while the exports were only 2,201,111 quintals. The imports of wheat flour to Nov. 30 were 1,275,034 quintals, while the exports in the same period were 118,203 quintals. The imports of rye to Nov. 30 last year were 23,316 quintals, while the exports to the same date were 630,880 quintals. The imports of rye flour to Nov. 30 were 1,895 quintals, while the exports were 65,595 quintals. The imports of maize in the first eleven months of last year were 84,360 quintals, while the exports were 567,277 quintals. The imports of Indian corn meal to Nov. 30 were 14,331 quintals, while the exports were 3,166 quintals. The imports of barley to Nov. 30 last year were 311,344 quintals, while the exports were 553,087 quintals. The imports of barley meal were 855 quintals, while the exports were 333 quintals. The importation of all the grain and flour enumerated represented a value of £8,600,000, while the value of the exports was £2,080,000; the difference, or £6,520,000, represents the amount of money which has had to be sent abroad from France, in order to provide for the food difficulties against which the Empire is struggling. This amount, already very considerable, is likely to be further increased before we witness a return to cheapness in the matter of cereals.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JANUARY.

Although the imports of foreign and colonial produce have been on an extensive scale for the time of year, and although the stocks of grain and flour in warehouse have increased, the wheat trade has been tolerably firm during the past month, and the quotations have advanced 1s. to fully 2s. per quarter. At that amount of improvement, however, only a moderate business has been transacted. The English wheats have made their appearance in very middling condition. There has been a steady feeling in the trade for all kinds of spring corn and flour, at very full prices. The future of the corn trade is regarded with much anxiety, as there are still 2,500,000 qrs. of wheat on passage from Australia, America, Chili, and ports eastward of Gibraltar. This large supply will be at hand within two months from this time, and no doubt will add to the unsold stock. On the other hand, however, such is the deficiency in the last crop of English wheat, it is pretty evident that the whole of it will be required for consumption. Our impression is, therefore, that current prices will be fully supported for several months.

The weather in nearly all parts of the United Kingdom has been very changeable. The young wheats, however, are looking remarkably well upon most soils.

The corn trade on the continent has continued firm; but the business doing in wheat for spring delivery has been rather limited. Barley and all other articles have sold steadily, at very full prices. In America, the value of wheat and flour has tended upwards, although the export demand has fallen off. From the 1st of September, 1867, to the 8th of January, current year, the shipments from the States to the United Kingdom amounted to 337,819 barrels of flour, 33 of meal, 7,103,832 bushels of wheat, and 2,294,524 of Indian Corn.

Great heaviness has prevailed in the demand for all kinds of wool, and the value of English qualities has given way fully 1d. per lb. The prospects of the trade are very discouraging;

indeed, prices have not yet seen their lowest range, owing to the rapid falling-off in the shipments of woollen cloth. The supply of wool arrived for the February-March sales to be held in London is 28,327 bales, viz.: 9,578 bales Australian, 3,920 New South Wales and Queensland, 2,988 Victoria, 2,187 South Australian, 483 New Zealand, and 18,749 Cape of Good Hope. It is fully expected that the importations of wool this year will be considerably in excess of 1867.

About average quantities of foreign hops have arrived, and passed into consumption. The hop trade, as a whole, has been very quiet, at about stationary prices. The top figure in the Borough has been £10 10s. per cwt. The quantities of English hops on offer have fallen off.

Both hay and straw have moved off slowly at the annexed quotations:—Meadow hay, £2 15s. to £4 5s.; clover, £3 10s. to £5 5s.; and straw, £1 10s. to £1 16s. per load. The supplies of hay on hand in the leading counties are very large, and in excellent condition. The stocks of turnips, beet, &c., for cattle food, are fully equal to last season.

Good sound potatoes have been scarce, and in request, at 150s. to 170s. per ton.

In Scotland the sale for wheat has continued steady, and prices have had an upward tendency. Barley and most other kinds of produce have been in fair request at extreme quotations.

The Irish markets have been very firm for good and fine wheats, at fully previous rates. Spring corn, flour, and meal have changed hands steadily on former terms.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The supplies of beasts on sale in the leading markets during the month have been only moderate. Nevertheless, the demand for all breeds has been in a sluggish state. The highest quotation in the Metropolitan Market has not exceeded 5s. per

8lbs., against 5s. 10d. in January, 1867. Nearly all breeds have made their appearance in full average condition; consequently, quite as much consumable food has been disposed of as in most former periods.

Compared with last year, the numbers of sheep have been on the increase; whilst the weight of the stock has further improved. The mutton trade has been in a most unsatisfactory state, and the best Downs and half-breeds have changed hands at from 4s. 8d. to 6s. per 8lbs.

The few lambs brought forward have been disposed of at from 35s. to 37s. per head.

The supplies of calves have been very moderate. Prices, consequently, have ruled firm, at 5s. 6d. to 5s. 10d. per 8lbs. for the best qualities of veal.

Pigs have met a heavy sale, and the value of prime porkers has not exceeded 4s. 2d. per 8lbs.

The total supplies of stock shown in the Metropolitan Market have been as follows:—

	Head.
Beasts	17,620
Cows	140
Sheep	86,220
Calves	520
Pigs	1,610

COMPARISON OF SUPPLIES.

Jan.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1867	18,150	110	82,400	756	1,508
1866	24,620	320	89,390	1,754	2,225
1865	20,669	376	73,714	1,095	2,370
1864	19,442	452	80,230	1,019	2,567
1863	20,455	450	83,422	1,637	2,456
1862	20,680	502	82,160	853	2,850
1861	17,612	505	75,240	677	2,000
1860	20,500	535	92,425	1,067	2,045
1859	18,805	364	90,620	921	2,400
1858	20,312	572	80,742	1,108	1,759
1857	19,947	355	81,300	1,071	2,355
1856	17,532	435	101,600	767	2,930
1855	19,717	500	120,460	962	2,625
1854	19,687	510	95,080	887	2,279

The imports of foreign beasts have fallen off considerably. Those of other descriptions of stock have been tolerably good. The arrivals into London have been:—

	Head.
Beasts	2,515
Sheep	16,352
Calves	673
Pigs	461

Total	...	...	...	...
Imports at corresponding periods:—				
Total in 1867	...	...	...	24,064
" 1866	...	...	...	25,838
" 1865	...	...	...	16,952
" 1864	...	...	...	9,907
" 1863	...	...	...	11,893
" 1862	...	...	...	8,783
" 1861	...	...	...	2,708
" 1860	...	...	...	6,760
" 1859	...	...	...	9,264
" 1858	...	...	...	2,342
" 1857	...	...	...	4,633
" 1856	...	...	...	3,292
" 1855	...	...	...	1,102
" 1854	...	...	...	7,919

The arrivals from our own districts, as well as from Ireland and Scotland, thus compare with the two previous years:—

From—	Jan., 1868.	Jan., 1867.	Jan., 1866.
Norfolk, Suffolk, &c. ..	7,000	6,900	6,900
Lincolnshire	800	1,500	5,290
Other parts of England.	4,580	5,000	3,100
Scotland	1,804	1,292	2,850
Ireland	700	258	800

COMPARISON OF PRICES.

	Jan., 1867.	Jan., 1866.	Jan., 1865.
	s. d.	s. d.	s. d.
Beef from ...	4 2 to 5 10	3 4 to 5 2	3 6 to 5 6
Mutton	5 0 6 6 4 4	6 8 4 2 6 2	
Veal	4 4 6 0 4 0	5 8 4 4 5 8	
Pork	3 8 4 8 4 0	5 4 3 4 4 8	

Full average supplies of Scotch and country meat have been on sale in Newgate and Leadenhall. The demand has ruled heavy, yet very little change has taken place in the quotations. The imports of foreign meat into London have been about 2,600 tons.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

The weather of the past month was very winterly for about a fortnight; then came a very decided thaw, which lasted for a fortnight, and which, reaching the Baltic, surprised merchants there, and almost broke up the ice; but the last week was rough, very wet, and stormy. Numerous shipwrecks were the consequence, and many lands were flooded, but we have not heard of serious consequences to the young wheat, though some reports have been unfavourable. Farmers in consequence of these changes have thrashed to great disadvantage, and some samples have come to market so damp that, without the help of foreign, they could not have been sold. The first Monday was the only brisk one of the month, and a smart advance was then obtained, but a reaction almost immediately followed, leaving the total gain nearly 2s. to 3s. per qr. on the finest English qualities, and 2s. per qr. on foreign, with much less buoyancy in sales. The inequalities of the season make it very doubtful as to the time when the frost in Northern Europe will break up, and this naturally produces indecision on the part of buyers. The old impression that the Baltic

will still do much is difficult to dislodge, though advices from Germany, Sweden, and even Russia, are all calculated to moderate the most sanguine expectations. How comes it that so much Hungarian wheat has found its way to the interior of Germany, and so little has been delivered to English contracts? and that so many compromises have been made here with foreign shippers? The fact is, it has paid them better to make these forfeitures on British account and sell in Germany. France is making great efforts to get her supplies by rail, and will, doubtless, to a large extent succeed; but we shall have the less, and be obliged to wait for Australian and American shipments after the Mediterranean supplies have got in. Poland has not gathered half a crop. Eastern Prussia is in a state of famine, both as respects corn and potatoes. In Northern Germany many farmers are already sold out, and we hear this is the case with many British farmers. And, be it remembered, the upward movement universally observable is not the result of speculation, but of a consumptive demand. How, therefore, we can be cheaper before harvest, except occasionally, we cannot see.

The following prices were recently current at the places named: White wheat at Paris 77s., red 74s.; red at Courtrai (Belgium), 74s.; at Louvain, 71s.; at Liege, 70s.; middling red at Maestricht (Holland), 68s.; Holstein and Saale red at Hambro', 72s.; at Dantzic, fine white and high-mixed are wanted, and prices relatively above ours, say 78s. for spring; at Cologne, red was worth 67s. per qr.; at Frankfort, 67s. 6d.; Banat wheat at Pesh (Hungary), 51s. 6d.; soft red at Algiers, 66s. 6d.; Upper Canada wheat at Montreal, 1 dol. 70 c. per bush., 56s. 8d. per 480lbs.; No. 1 spring in Milwaukee, 2 dol. 7 c. per bush., 53s. 6d. per 480lbs.; No. 2 ditto in Chicago, 2 dol. 2 c. per bush., 52s. per 480lbs.

The first Monday in Mark-Lane commenced on small supplies of English wheat, but the foreign arrivals were fair. There was a very limited show of samples during the morning in the Essex and Kentish stands. This circumstance, connected with a large advance in the country, raised prices 3s. to 4s. per qr. In foreign also a fair business was transacted, at from 1s. to 3s. per qr. improvement, the smallest advance being in hard qualities. A thaw, however, having set in, the market closed with much less excitement than at the commencement. Floating cargoes participated in the rise 2s. to 3s. per qr. The country markets were much excited by the large advance of London. At Hull farmers scarcely knew how to ask enough, but millers would not give beyond the London rates—3s. to 4s. per qr. The same rise was established at Ipswich, Sleaford, Spalding, Market Harbro', Bury St. Edmunds, Wolverton, Monmouth, and several other towns; but as the week advanced, there was less inquiry, and not so much money paid. Still, Saturday's markets generally were only up 1s. to 2s. per qr., and Liverpool declined 3d. to 4d. per cental on Friday.

The second Monday had poor English supplies, but the foreign were rather larger than on the previous week. The thaw having lasted for a week, its damp influence was seen in the scanty show of samples sent up from Kent and Essex. There was some reaction in the trade, and samples could only be placed at a reduction of 1s. to 2s. per qr. Holders of fine foreign would not give way in prices; but some sales of inferior American and Russian were made at 1s. per qr. less money. Floating cargoes were nominally the same. The reaction shown at Mark Lane soon evinced itself in the country, though farmers, in anticipation of lower rates, brought forward only scanty supplies. The unprofitableness of thrashing in damp weather influenced others; yet at places where any quantity was exhibited, it was necessary to accept the London decline in order to sell, though Boston, Birmingham, and Bristol were down only 1s., and also several places more. Liverpool was lower on Tuesday 3d. to 9d. per cental, but on Friday recovered 2d. to 3d., and so did a few other markets on Saturday to the extent of 1s. per qr.

On the third Monday there was a moderate supply of home-grown wheat, but a very liberal arrival from abroad, including some from America and Australia. There was another short supply from Essex and Kent during the morning, and the

condition was worse than usual. A few picked samples went off at rather more money, but the bulk was below millers' wants. The foreign trade had more firmness, and in some cases 1s. per qr. more money was paid, but the advance was not general. Floating cargoes, though not actively in demand, were held at the prices of the previous week. Many markets this week were only firm, and a few tended downwards; but more generally there was an improvement of 1s. per qr., and some advanced 1s. to 2s. per qr., as Ipswich, Birmingham, Leeds, Croydon, and Chichester. Liverpool was up on Tuesday 3d. to 4d. per cental, and 2d. more on Friday.

The fourth Monday opened on very small supplies both English and foreign. There was a very limited show of fresh samples during the morning on the Kentish and Essex stands, the majority of which were in miserable condition in consequence of the wet weather. The few fine and dry lots that appeared were taken off slowly at some improvement on the previous Monday's quotations—say about 1s. per qr. The best foreign also sold at a similar advance, in consequence of an attendance of small country millers; but low qualities of hard wheat were no dearer.

The imports into London for four weeks were in English Wheat 11,946 qrs., in foreign 88,294 qrs., against 20,473 qrs. English, 84,815 qrs. foreign, for the same period in 1867. The general averages commenced at 67s. 4d., and closed at 71s. 6d.; those of London opened at 68s. 3d., and ended at 73s. 8d. per qr. The imports into the kingdom for four weeks ending 18th January were 3,221,034 cwts. wheat, 322,192 cwts. flour. The London exports in January were 4,200 qrs.

There has been a better demand for flour during the month, with a gain on country sorts of about 2s. per sack. Wheat having become scarce in the country, it has forced millers to purchase foreign qualities at higher rates than would leave a profit, so that Norfolks have sold freely at 50s., and choice marks at higher rates. Foreign has also gained in value 1s. per sack and about 6d. per brl., the late arrivals all losing money at this advance, though rates at Paris have lately been declining, till the last advices showed some reaction; type Paris being worth 55s. per sack in that city, while our highest quotation for French in London is only 58s. It was expected on the last Monday that the top price would be raised, but those who regulate the matter finally agreed it should remain at 64s.; we, however, confidently expect an advance. The imports into London for four weeks were 74,819 sacks English, 7,175 sacks 17,323 brls. foreign, against 74,911 sacks English, 6,906 sacks 11,876 brls. foreign, for the same period last year.

Barley has been gradually improving in value from moderate English and small foreign supplies, but the slackness in the malt trade and unprofitableness of store-keeping have very much limited the demand for all sorts, though there is no probability of prices giving way before the new foreign supplies arrive in spring. The advance has been about 1s. per qr. The imports into London for four weeks were 12,338 qrs. British,

5,375 qrs. foreign, against 11,787 qrs. British, 65,104 qrs. foreign in 1867.

There has been a great defalcation in the foreign arrivals of oats this month, with scarcely anything from Scotland or Ireland; white English qualities have exceeded those of last year. Though the chief and almost entire supplies of foreign happened on the first Monday, this was the only day on which there was an advance, and that did not exceed 6d. per qr. Though ever since these supplies have dwindled almost to nothing, there has been no decidedly upward movement, yet in the last Monday retail buyers found the market rather against them. Prices on the Continent have been rising, and as it is by no means certain we shall have a speedy and effectual opening of the Baltic, large buyers, who have been holding off in the expectation of doing better, may be disappointed. The imports into London for four weeks have been 17,886 qrs. English, 140 qrs. Scotch, 920 qrs. Irish, and 88,037 qrs. foreign, against 14,694 qrs. English, 313 qrs. Scotch, 2,155 qrs. Irish, and 147,287 qrs. foreign in 1867.

The arrivals of maize have been moderate, but the high prices lately realized and still maintained have limited the consumption, and made sales very slow. With but moderate supplies, both English and foreign, beans have gradually hardened in value, though sales have not been free. The stock of Egyptian is limited, with values about 43s. per qr. The imports into London for the month were 3,713 qrs. English and 2,713 qrs. foreign, against 4,048 qrs. English and 3,471 qrs. foreign for 1867.

Peas have rather gained than otherwise during the month, though arrivals of white from America have been fair. During the frost boilers were wanted for consumption at full prices, and when there were symptoms of its breaking, there was a renewed demand for Sweden and Norway, where the people have suffered great privations, and more will probably be shipped there, as opportunity occurs, making it likely that boilers will further advance; they are now worth 47s. per qr. The imports into London have been 1,690 qrs. English and 7,804 qrs. foreign, against 2,774 qrs. English and 10,934 qrs. foreign in 1867.

In consequence of a heavy supply of linseed from Calcutta on the third week, prices gave way 1s. per qr., but there are already symptoms of an upward movement, stocks being next to nothing. Cakes have sold freely at full prices all through the month. More samples of red cloverseed of home-growth have lately been exhibited, though there appears but a small portion of strong purple seed this season, which has been held at 90s. per cwt., while many samples are scarcely worth half as much, and fair foreign may be had on moderate terms. In France it has been very dull, but begins to rise, and there seems some probability of an advance here. Spring tares are coming into demand at from 48s. to 54s.

IMPERIAL AVERAGES.

For the week ended January 18, 1868.

Wheat	53,478½ qrs.	71s. 6d.
Barley	71,365½ "	42s. 1d.
Oats	8,710½ "	35s. 7d.

COMPARATIVE AVERAGES.

Years.	WHEAT.			BARLEY.			OATS.		
	Qrs.	s. d.		Qrs.	s. d.		Qrs.	s. d.	
1864...	66,341	...	40 10	74,571½	...	31 10	12,774½	...	18 10
1865...	78,314½	...	36 10	76,763½	...	28 9	9,855½	...	19 1
1866...	58,323½	...	45 7	67,306½	...	32 10	9,408½	...	23 10
1867...	66,505½	...	63 8	53,308½	...	44 5	9,175½	...	33 4
1868...	53,478½	...	71 6	71,365½	...	42 1	8,710½	...	35 7

AVERAGES

FOR THE LAST SIX WEEKS:		Wheat.		Barley.		Oats.	
		s. d.		s. d.		s. d.	
Dec. 14, 1867.....		67 8		40 8		25 5	
Dec. 21, 1867.....		68 9		41 2		24 4	
Dec. 28, 1867.....		67 4		41 9		25 8	
Jan. 4, 1868.....		67 10		41 4		25 10	
Jan. 11, 1868.....		69 6		47 6		25 5	
Jan. 18, 1868.....		71 6		43 1		25 7	
Aggregate of the above ..		68 4		41 3		25 4	
The same week in 1867.....		62 8		44 5		23 4	

BRITISH SEEDS.

MUSTARD, per bush., brown 14s. to 16s. white	9s. to 10s.
CANARY, per qr.	68s. 7½s.
CLOVERSEED, red.....	54s. 7½s.
COSIANDER, per cwt.....	30s. 21s.
TARES, winter, new, per bushel	6s. 7½s.
TURNSEED.....	20s. 2½s.
RYEGRASS, per qr.....	12s. 20s.
LINSEED, per qr., sowing 70s. to 72s., crushing	63s. 60s.
LINSEED CAKES, per ton.....	£11 15s. to £13 5s.
RAPSEED, per qr.....	54s. 60s.
RAPSEED CAKE, per ton.....	£6 0s. to £8 10s.

HOP MARKET.

Mid and East Kent	£6 15	.....	8 15	.....	10 0
Weald of Kent	6 0	.....	6 10	.....	7 7
Sussex	6 0	.....	6 6	.....	6 15
Farnhams	8 0	.....	8 15	.....	10 0
Bavarians	4 10	.....	5 12	.....	7 0
Belgians	5 15	.....	4 4	.....	4 15
Yearlings	5 10	.....	6 0	.....	6 15

POTATO MARKET.

SOUTHWARK WATERSIDE.

Yorkshire Flukes.....	130s. to 170s. per ton.
Ditto Regents	130s. to 150s. "
Ditto Rocks	110s. to 130s. "
Kent and Essex Regents.....	140s. to 160s. "
Lincolnshire Regents	130s. to 140s. "
Dunbar and East Lothian Regents...	130s. to 150s. "
Perth, Forfar, and Fife Regents...	110s. to 130s. "
Ditto Rocks	110s. to 120s. "
French and Belgian whites.....	90s. to 100s. "

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Jan. 27.—Having nothing here to offer but old Butter in casks, our sale upon it is very slow.

Dorset, fine	110s. to 112s. per cwt.
Devon	96s. to 100s. "
Fresh	12s. to 17s. per doz.

POULTRY MARKETS.—Turkeys 5s. to 12s., Geese 5s. to 7s., Ducks 2s. 6d. to 3s., tame Rabbits 1s. 3d. to 2s., wild ditto 1s. to 1s. 3d., Pigeons 8d. to 1s. each; Surrey Fowls 8s. to 10s., ditto Chickens 6s. to 7s., Barndoor Fowls 4s. to 7s. per couple. English Eggs 13s. to 14s., French 11s. to 12s. per 100. Fresh Butter 1s. 2d. to 1s. 5d. per lb. GAMES: Pheasants 4s. to 5s., Partridges 1s. 6d. to 2s. 3d., Hares 3s. to 4s., Woodcocks 3s., Wild Ducks 2s. 3d., Widgeons 1s. 6d. each.

ENGLISH WOOL MARKETS.

CITY, MONDAY, Jan. 27.—We have no change to notice in the value of any kind of English Wool. The market, however, is heavy. The inquiry for export is very limited, whilst the supply of wool on offer is seasonably large.

CURRENT PRICES OF ENGLISH WOOL.		s. d.	s. d.
FLEECES—Southdown hoggets.....	per lb.	1 3	1 2½
Half-bred ditto	"	1 2½	1 1½
Kent fleeces.....	"	1 1	1 1
Southdown ewes and wethers ..	"	1 1	1 1½
Leicester ditto	"	1 1	1 1
Sorts—Combing	"	1 0	1 6½
Clothing	"	1 2	1 6

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E. Barker

E. Corbet

Khatplan.
 One of the Arabians presented by His Imperial Highness the Sultan of Turkey to His
 Majesty, near the Prince of Wales.
 Painted by Rogers, & Barker, 205, Strand, 1866.



F. H. 1868

Prize Pups.

The property of Mr. Melville, Carewright & Co., 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 471, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 519, 521, 523, 525, 527, 529, 531, 533, 535, 537, 539, 541, 543, 545, 547, 549, 551, 553, 555, 557, 559, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581, 583, 585, 587, 589, 591, 593, 595, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 643, 645, 647, 649, 651, 653, 655, 657, 659, 661, 663, 665, 667, 669, 671, 673, 675, 677, 679, 681, 683, 685, 687, 689, 691, 693, 695, 697, 699, 701, 703, 705, 707, 709, 711, 713, 715, 717, 719, 721, 723, 725, 727, 729, 731, 733, 735, 737, 739, 741, 743, 745, 747, 749, 751, 753, 755, 757, 759, 761, 763, 765, 767, 769, 771, 773, 775, 777, 779, 781, 783, 785, 787, 789, 791, 793, 795, 797, 799, 801, 803, 805, 807, 809, 811, 813, 815, 817, 819, 821, 823, 825, 827, 829, 831, 833, 835, 837, 839, 841, 843, 845, 847, 849, 851, 853, 855, 857, 859, 861, 863, 865, 867, 869, 871, 873, 875, 877, 879, 881, 883, 885, 887, 889, 891, 893, 895, 897, 899, 901, 903, 905, 907, 909, 911, 913, 915, 917, 919, 921, 923, 925, 927, 929, 931, 933, 935, 937, 939, 941, 943, 945, 947, 949, 951, 953, 955, 957, 959, 961, 963, 965, 967, 969, 971, 973, 975, 977, 979, 981, 983, 985, 987, 989, 991, 993, 995, 997, 999.

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PLATE V.

KATPLAN; A ROYAL ARABIAN.

Katplan is one of the four Arabians presented by the Sultan to his Royal Highness the Prince of Wales, in commemoration of his Imperial Majesty's visit to this country.

Having received permission to inspect these horses on the part of *The Field*, we cannot do better than reproduce our description of them here, beginning with Katplan, the handsomest of the four, who has very much the character of a charger, for which purpose, we believe, he is intended. From his size and power he gives one more the idea of being a Barb than Arabian, standing fifteen hands and half-an-inch—that is, just about the same height as the Godolphin. A nice light grey in colour, he has a good kindly countenance with a prominent eye, and the head well-set on to a short, handsomely-crested neck, running into powerful fairly-laid shoulders and high withers. He has a good middle, back, and loins, with strong serviceable thighs and quarters, and long muscular arms, being very short from hock and knee to the ground, with capital pasterns and excellent feet. From the glimpse we had of him out, when we met him at the top of Pall-mall some weeks since, it struck us that Katplan had smart, showy action, and was in every way worthy of his mission to carry a Prince upon parade.

Of the others we go on to say that the horse in the opposite box—for the four stand all in a cluster at Marlborough House—has already had the honour of being ridden by his Royal Highness. In fact, the Prince was on his back just previous to the accident at Newmarket, when one of the royal servants had changed to him. This is Qouch, a beautiful deep blood bay, standing 14. 2½ high, and an animal with quite as much, or more, the look of an English thorough-bred horse than of an Arabian. He begins with a good head and neck, although with a somewhat small eye for the sort; has well-laid shoulders, slightly loaded at the point, with a good middle, quarters, arms, thighs, and hocks; he is short in the cannon, but smaller than his comrades below the knee, although in this respect he would compare to advantage with some of our own breed.

These two we take as the pick of the lot, and no question they are both very admirable specimens of the Eastern horse, although we would not undertake to say of what particular variety. Of the other pair, Ilderim, another grey, standing 14 hands 2½ inches high, has loaded shoulders, with long, narrow mule-like feet, and his toes terribly turned out, both before and behind. He has, however, good limbs and great flat legs, being bigger than any of the others below the knee, and this may probably be the reason for his having been used at the stud, although we should infinitely prefer for such purposes either of the two horses we have already noticed.

Durwisch, the youngest and meanest-looking of the four, is also a grey, standing fourteen-two, with more perhaps of the Arabian proper in his size and general appearance than any of them; still he does not show much fashion, his head being set on thick and throaty, while he stands very "cowy" in his hocks; but he has fair shoulders and middle, with a good back and capital fore-legs. In fact, the big bone and the clean flat leg are points of special excellence, which, coupled with a certain power and substance, would go to argue for something beyond the calibre of the pure Arabian.

These horses are all remarkably quiet and manageable, while the bits they were brought over in, and in which they are still ridden at exercise, are by no means severe. They are all capital feeders, having been first put upon barley, as the only fit food for the horses of the Prophet; but they have since taken kindly enough to hay and corn, and will leave anything for the sweet English meadow-hay, which, indeed, the bay horse, Qouch, will never leave so long as there be a bite before him.

The Sultan extended his handsome forget-me-nots to the Duke of Cambridge, who also received four, only one of which is retained by his Royal Highness. This is an old white horse that the Sultan himself was wont to ride as a charger, and who shows signs of work, getting rather round in his joints, while there is no mistake as to "Sultan's" lineage, although he is particularly

plain about his head. The Duke of Cambridge has, we believe, in turn, presented another of his Arabians to the Princess Alice of Hesse; and her Royal Highness, as an accomplished horsewoman, will no doubt quite appreciate the gift-horse. A third has been accepted by another of the Princesses of the blood, and the fourth, if we remember aright, given to Lord Newport. A black was sent over specially to the Duke of Beaufort as Master of the Horse, and it is his grace's intention to put the Arab to his pony mares on the Brecon hills.

The Emperor of the French was also favoured with a present of Arabians, which our artist, Mr. Corbet, had an opportunity of seeing on a recent visit to France; but for really good looks he does not consider these equal to the horses sent over to our own Prince.

Notwithstanding that there is something of a romantic notion still associated with his uses, beauty, and worth, the Arab horse has gone clean out of fashion in this country, and it would be strange if this were otherwise. However much we may owe in the first instance to the Desert steed in the establishment of our own unequalled breed of horses, it is very clear that we can reap no further advantage from any return to the original strain. From the Arab, Barb, or Turk we should obtain neither size nor symmetry, speed nor stoutness. What with his loaded shoulder, his short quarters, his thick neck, and his cow hocks, the Arabian will rarely "prove" as a stand-still horse; while, when set going, almost all the public trials ever published have been yet more against him. We have ridden an Irish mare as a hack in Rotten-row that subsequently "lost" a champion Arab in an eight or nine mile match over the sands of Egypt. Such examples might be infinitely multiplied; but it may be sufficient to say that in the conditions of the Goodwood Cup "pure Barbs, Turkish, or Arabian horses" are allowed 32lb., and that even

then they have never been known to live either the pace or the distance; nevertheless enthusiasts will occasionally crop up, who, looking to the number of weeds, jades, and cripples which are annually exposed on the English turf, consider it would be better to go back to the fountain head for something imbued with more heart and endurance. But in arriving at this conclusion our reformers overlook the fearful ordeal to which the race-horse is submitted. He is backed, tried, and extended, his powers exerted to their utmost before he is two years' old, and by the end of his third year or second season he has done double or treble the work the good old sort ever did in a lifetime. No wonder, then, if he gives way, or if his courage or his limbs fail him! But put the Arabian to the same test, and where would he be? Or nurse and coddle the thorough-bred until his growth and strength be fully developed, and upon every possible showing would he rank as immeasurably superior to his Eastern ancestry. He would carry more weight, and go at a greater rate; he would last longer, and be a pleasanter horse to ride, as well as a more valuable one to breed from. Put in comparison with a pedigree from *The Stud Book*, the first cross of the pure Arab or Barb is absolutely valueless. The late General Angerstein persevered with it yet farther, but for racing the first cross or the double cross was equally a failure: nor does it appear to have answered for other purposes. An Arabian was used for a season or two upon a drive of Exmoor pony-mares, and the produce was almost unsaleable, though we are quite willing to admit that just a taste of Arabian blood may tell in "a perfect hack." There is a certain neatness of frame, and a prettiness about the head, which our own little horses do not often possess: as the Arab, again, can bend his knee and show himself off very stylishly—all points worth looking to.

PLATE VI.

PRIZE PIGS.

THE PROPERTY OF MR. MELVILLE CARTWRIGHT, OF MELVILLE HOUSE, LADY BANK, FIFE.

At the Smithfield Club Show in December, this pen of pigs took the first prize of £15 in the class of "pigs of any breed above six and not exceeding nine months old." They were eight months and sixteen days old, and fed on meal and milk. Mr. Kent, of Goodwood, was second with some of his Sussex, and Captain Warren, of Worthing, third with a Yorkshire and Essex cross; while Lord Radnor's pen was highly commended, and Mr. Stearn's black Suffolks commended. We spoke to the merits of Mr. Cartwright's pigs at the time as "a very beautiful pen, specially remarkable for their handsome heads, true frames, and fine hair."

Mr. Melville Cartwright has been cultivating the Improved Middlesex pig for the last sixteen years; but he never exhibited until 1857, in which year he took a first prize at Birmingham, where he was also first in 1863, '64, '66, and '67; having,

moreover, twice during this period received the silver cup for "the best pen of fat pigs in the Hall." In 1865, Mr. Cartwright's entry was not admitted to the Midland Show, in consequence of his bailiff having failed to comply in some particular with the Cattle Plague regulations, but the pigs went on to London, where they were awarded the first prize and silver cup as best of all. They were, however, subsequently disqualified from their ages having been calculated by the usual month of four weeks instead of the calendar month, and they were consequently *not old enough*, for the class in which they were entered. This was very hard in very strict law; but in 1866 and 1867 Mr. Cartwright again took first prizes at the Smithfield Club.

These pigs show a deal of quality with good size; have plenty of nice fine hair, and are wonderfully clever about their heads and collars.

DAME NATURE'S LESSONS.

BY CUTHBERT W. JOHNSON, F.R.S.

It is not often that we study so carefully as we ought Nature's hints; and yet almost all our great improvements in agriculture have been suggested by her. But then we are too apt to neglect her instructions: we are far too wont to content ourselves by employing mere verbiage when we are trying to read Dame Nature's lessons. And this we often call very complacently "an explanation!" It may not be without value to the readers of this magazine, if we dwell a little upon this important theme. And it will perchance make the facts of our case more clear, if we take a retrospective glance at the many such hints that were long neglected by former generations of England's farmers. We may hence be led to the reasonable conclusion that there may be many other profitable suggestions to be derived from a still more extended study of the Creator's works. And, indeed, we shall assuredly arrive at a profitable result, if we are thoroughly convinced that all our knowledge of His mighty arrangements is still very minute.

I will endeavour, then, to trace a few of the improvements of modern days which were in vain suggested by Nature to our forefathers. And in doing this I will, for reasons which will be apparent to the reader, examine the cultivation of a district which I view from my study-window—the fine Surrey parish of Beddington.

This parish consists of 3,911 acres of land, and occupies the sides of a portion of the valley through which the river Wandle flows. Its soils are various, some resting on the chalk formation, some alluvial soils: others are portions of the plastic and the London-basin clays.

Now it happened (very conveniently for our comparative examination) that, about four centuries since, the Bishop of Winchester had the tithes of Beddington valued by a commissioner. The report of this valuation is, I believe, still preserved at Winchester.

From a copy of this valuable document in my possession I will extract such portions as will show the produce of Beddington in the year 1454. I will contrast this with its present produce, as found by other tithe-commissioners, and will then glance at the neglect of Nature's hints by the poor little Beddington farmers of bygone days. We may here remind ourselves that they were times of general and profound ignorance. Henry VI. was upon the throne: Joan of Arc had recently been burnt as a sorceress.

Before we examine the report of 1454, let us see what is the present amount of the tithes of Beddington. These were a few years since settled by the Tithe Commissioner at the sum, for commutation, of £1,215. This valuation was as follows—a statement for which I was indebted to the late excellent rector of Beddington, the Rev. James Hamilton:

	s.	d.
1,153 qrs. of wheat, at	7	0½
2,046 qrs. of barley, at	8	11½
2,945 qrs. of oats, at	2	9

The deductions made from the tithes were far less, in proportion, than those of 1454, being £281 19s. 9d.

Let us now contrast this with the following more minute account of the value and the deductions made from the tithes of Beddington in the days of Henry VI. It was a century after this that our Queens, Mary and Elizabeth, were wont to visit the Carews, who there re-

sided, and owned nearly the whole of the parish. Beddington Hall, in fact, was built by Sir Nicholas Carew, who was Master of the Horse to Henry VIII.

The report, then, of 1454 tells us that the tithes of the parish were as follows:

	£	s.	d.
6 quarters of wheat, at 5s. ...	...	1	10 0
60 " barley, at 3s. ...	...	9	0 0
20 " oats, at 1s. 8d. ...	...	1	13 4
Peas and tares ...	...	0	6 8
30 lambs, at 6d. ...	...	0	15 0
180 fleeces of wool, at 2½d. ...	...	1	13 4
Tithe of geese and pigs ...	...	0	6 0
Tithe of hemp ...	...	0	1 5
Tithe of hay ...	...	0	1 0
Tithe of cows and calves ...	...	0	2 0
Tithe of apples and nuts ...	...	0	2 6
Tithe of the mill ...	...	0	16 8
Offerings ...	...	0	13 4
Tithe of the rabbits and doves belonging to Sir Nicholas Carew ...	...	0	13 4
Tithe of Sinclo's rabbits ...	...	0	2 0
Straw and chaff ...	...	0	1 4
Glebe lands (now are about 50 acres) ...	...	1	0 0
On the Feast of the Purification of the Virgin Mary and for the purifying of other women ...	...	0	5 0
Total ...	£24	2	9

The Commissioner valued the whole tithes at £24 2s. 9d., a sum which, even considering the then high value of money, no one can deem too high an income for the then Rector of Beddington. But there was nearly half this deducted for what they called "reprises." These were as follows:

	£	s.	d.
For collecting the wool and the lambs ...	...	0	1 0
For collecting and carrying the grain ...	...	1	16 8
For thrashing the said wheat ...	...	0	3 2
" " barley ...	...	1	0 0
" " oats ...	...	0	5 0
" " peas and tares ...	...	0	0 6
For bread, wine, frankincense, and wax ...	...	0	3 4
For bell-ropes ...	...	0	1 8
The Archdeacon's fees ...	...	0	9 8
Moiety of the tithing ...	...	1	0 8
Annual repairs ...	...	1	0 0
For the business of the church ...	...	0	6 8
The Abbot of Bermondsey's pension ...	...	5	0 0
To sundries ...	...	0	7 2
Total ...	£11	15	10

The Commissioner made the reprises to amount to £11 15s. 10d.; so that, deducting this from his statement of gross receipts, the then rector only received from his tithes a clear income of twelve pounds six shillings and eleven pence!

The reader will remark that the tithe of the Beddington rabbits and pigeons was then more considerable in value than that of all the lambs of the parish. And we may judge of the impoverished state of the land when we find that, taking the tithe of the wheat to represent one-tenth of the produce, then sixty quarters of wheat was all that was annually produced in Beddington—a mere fractional part only of what is now grown in the parish.

To what, then, must we attribute the miserable state

of things in the fifteenth century in this then poverty-stricken parish but the want of knowledge and capital of the little holders of those days? We can hardly picture to ourselves the kind of persons who then tilled the soil, but the few slight notices afforded by the earliest writers on English farming will suffice to show that they must have been of a kind of whom a modern intelligent ploughman would have been heartily ashamed. And they do not appear to have improved during a generation or two, for about seventy years after the Bishop's Commissioner had made his report, Sir Anthony Fitzherbert published a work—the first ever written by an English author for the use of the tillers of the soil. This Sir Anthony Fitzherbert, whose descendants still hold the estate of Tissington in Derbyshire, printed his "Boke of Husbandrye" in 1523. It was in this year that he was made a Judge of the Court of King's Bench. He was held to be "an oracle of law in his time." He appears to have possessed the most undoubted courage, and the most uncompromising integrity. He was one of the very few who dared to oppose Cardinal Wolsey in the height of his power; and on his death-bed, at a period when all the favoured of the land were eagerly scrambling for the spoils of the Church of Rome, he solemnly warned his children on no account to accept of any of the sequestered spoils of the abbays. His descendants have often been honourably distinguished in the ranks of literature and in the public service of their country. The family were ennobled in 1801, when Alleyne Fitzherbert was created Lord St. Helen's. We find in the "Boke of Husbandrye" not much said of the personal duties of the farmer of the reign of Henry VIII.; but we may gather from Fitzherbert's description of the duties of a farmer's wife, what sort of person her husband was likely to be. The Judge tells us that, "It is the wife's occupation to winnow all manner of corn, to make malt, to wash and to wring, to make hay, to shear corn, and in time of need to help her husband to fill the muck-wain or dung-cart, to drive the plough, to load corn, hay, and such other; and to go or ride to the market to sell butter, cheese, milk, eggs, chickens, capons, hens, pigs, geese, and all manner of corn."

They evidently then lived chiefly upon bacon, for good Bishop Latimer, in one of his sermons preached before King Edward VI., when advocating the interests of the farmer, observed, "They must have swine for their food, to make their bacon of; their bacon is their venison, it is their necessary food to feed on, which they may not lack."

Then, again, Fitzherbert, in his chapter entitled, "To all men how to thrive," told them: "I will desire the thrift-expecting husbandman to rise early in the morning, according to the old saying 'To rise early makes a man holy, healthy, and wealthy'; and to go about his closes, pastures, fields, and principally about by the hedges; and to have in his purse a pair of tables, and when he seeth anything he would have amended, to write the same down in his tables." The learned Judge, however, recollecting that writing was a rare accomplishment in Tudor days, adds, "And if the thrift-coveting person cannot write, then let him nicke the defaultes upon a stick, and show them to his bailly."

The cultivators of those times were used to select their ground on the richer soils, at the bottom of valleys. The lands near to streams were of course preferred. Most of the old manor-houses clustered there. They needed the water for their moats and their fishponds. Here, too, the flood-waters fertilized their meads by the matters they deposited. Nature thus did the work. But still her hints passed unheeded. We find hardly a trace of a water-meadow of that age. According to Mr. Samuel Jonas (Prize Essay on "Cambridgeshire," *Jour. Roy. Ag. Soc.*, vol. vii., p. 59), the first water-mead formed in England was not till the close of the sixteenth

century. This was by an Italian, Pallavicino, at Braham, near Bournebridge, who watered about 300 acres by constructing dams in the adjoining river. Liquid manure was then never employed; the drainage of their yards was received, as too often in our own days, by the yard-pond or an adjacent ditch. Here we find Fitzherbert giving the result of his observations; for in his chapter 19, entitled "How to carry out Manure or Dunge, and how to spread the same," he observed: "Have regard your manure be layd upon small heapes, neere together, and to spreade it evenly, and to leave no dunge there as the great heape stooode; for there the moistnesse of the dunge shall make the grounde ranke enough. And let not your heapes stande too long ere they be spreade, for if they do the goodnesse of your manure, chiefly if it take a shower of raine, will run into the grounde where the heape stands, and the rest whene it is spreade will little profit."

We may smile complacently when we are thus tracing the neglect of Dame Nature's suggestions, by the farmers of Tudor days. But are we thoroughly awake in the days of Victoria? Do we generally collect and employ the richest portions of our farm-yard manure? Is liquid manure sufficiently employed? Is that soaking away from cesspools or flowing from our sewers devoted to the purpose for which Dame Nature intended them—viz., the food of plants?

As in the days when Henry VIII. was on the throne the farmers had little manure for their arable lands, and what they had was wretchedly poor, so they had to adopt a wretched system of cultivation. They grew corn on their uplands till they ceased to yield a remunerative crop. And then they *rested* it. That is, they either sowed upon it grass seeds, collected from a hay loft, or they let the grasses and weeds spring up, such as nature furnished. To this practice we find Fitzherbert alluding, when he observed: "In Cheshire and other counties they use for manure a kind of blewie marble like earth, which theye calle marle. This is for these countries an excellent manure, and though it bee exceedingly changeable, yet through the good neighbourhood it quietteth the coste; for if you manure your groundes once in seven or twelve yeares it is sufficient, and looke how many yeares he beareth the corne, so many yeares he will beare grass, and that plenty."

When they, farmers of those times, "rested" the land for a few years, by allowing only grass to grow, they found, after such a considerable interval, the land would again produce remunerative cereal crops. The operation of Nature by which this result was produced was far above their comprehension. They noticed that when their wearied plough-horses were rested they were again able to be profitably employed, and as they found that a similar result was obtained by "resting" or leaving their exhausted fields to Nature's care, they called both practices by the same name.

It is only of late that we have had some notion of the several modes which Nature employs in thus renovating a "rested" worn-out soil. It is not many years since we learnt that some of the grasses and some of our cultivated crops almost entirely derive their purely organic matters from the atmosphere. The old Roman farmers were used to cultivate lupins, and plough them in as green manure. Our forefathers did the same with buckwheat and rape; but none of these understood *why*—by this process the soil was enriched. Then again, it was, until a still more recent period, believed that rain and snow were composed of pure water. It was only the poets who dreamt of its containing nitre. Modern chemistry has shown, however, that the water thus showered over our soils contains minute portions of ammonia, nitric acid, and even phosphoric acid. When, then, we employ the manure of the

farm-yard, the ammonia of the guano of Peru, the nitric acid of saltpetre and cubicpetre, the phosphoric acid of bones, and the superphosphate of lime, we are only treading in a path in which Nature has quietly led the way since the creation of our earth.

The farmer of the fifteenth century, however, had made sundry small observations with regard to the virtues of manures of this kind; for Fitzherbert, when speaking in his sixteenth chapter of "Howe to make barraine grounde bryng forth good corne," he thus advised his brother-farmers: "If thou wilt be assured that no corne thou sowest shall faile, then take saltpetre and mingle it with thy corne and sow it, and thy labour shall never be frustrate. For want of saltpetre, take the blacke dregges of oil, and wet thy seede ere thou sow it, and it shall undoubtedly spring up. If thou hast none of these, then take pigeons' dung, and mingle it with thy seed in the hopper, and sow it: though it be not so good as the other, yet is the profitabyl virtue wonderfull."

Even Fitzherbert had evidently a strong conviction that more knowledge might be well employed in the cultivation of the soil; for he remarks in one portion of his very curious and interesting work: "There is a seede called 'Discretion.' If a husbandman have of that seede and mixe it with his corne, they will growe doubtles much the better."

This little volume of the learned judge was published in 32mo., and had for a title, "The Boke of Husbandrye: verrey profitable and necessarye for all manner of persons. Newlye corrected and amended by the Auctor Fitzherberte by the divers additions put thereunto." The edition I have consulted has also on its title-page: "Imprynted at London by John Walle, dwelling in Foster Layn, at the sign of the Hart's Heade." The work is divided into four books, and is rather a curious collection and strange admixture of rural life descriptions, and advice for the prosperity of country affairs, than a set treatise on husbandry.

From such a retrospect we may derive considerable encouragement. For the more we are convinced that it is only by carefully adopting Nature's suggestions that we can profitably increase the produce of our farms, the greater becomes our inducement to study her movements. Now we are all aware that many great mysteries attend her footsteps; for instance, we ever and anon meet with crops of corn far exceeding in amount anything commonly produced. The cause of these great crops is at present hidden from us; but they at least serve to prove that the land is capable of bearing far larger crops than under our present state of knowledge we are able to obtain from it. Then again, with regard to fertilizers there are many things yet to be learnt; for instance, the salts of potash are found in most plants—it is, there is little doubt, a direct food of all our crops—and yet we have never yet been able to use these salts so as to produce any beneficial result as fertilizers. And then with regard to earthy dressings, we have reason to believe that a great deal is still to be understood. Even in the use of the poorest sands we meet with some facts that promise to reward future inquirers. To give only one instance, we are used in Surrey to dress our grass lands with road sand, this being obtained from ways made and repaired with flints. The effect of this sand is to encourage very materially the growth of the finer kinds of the grasses. And the use of this sand is neither a novel practice, nor is it confined to our parish of Croydon; for Fitzherbert, in his chapter on "The divers kindes of manures," observed: "The shovelings of roads is excellent, especially for barlie."

We might enlarge upon these hints of Nature, and every reader will call to mind other mystic phenomena; but it is needless to adduce more proofs of the great fact that the more deeply we dive into the great Book of Nature the more profitable the reading becomes to us, and more and more must we be impressed with the power, the wisdom, and the abounding benevolence of the great Author of that book.

THE APPLICATION OF FOLD-YARD MANURE.

BY A PRACTICAL FARMER.

My last short paper was principally confined to the making and the yard management of farm-yard manure. In this paper I propose to confine myself to the application of this manure in the season of winter. Before proceeding, I will, however, remark that so far as relates to the true value and economy of farm-yard manure it is my decided opinion, founded upon long experience, that it ought to be made in as great a bulk as possible on every farm, and be not disturbed by turning or cartage until the time, or near the time, when it may be required for farm service. The judgment of the farmer must decide this point. If from one cause or other it is not sufficiently fermented, then it will require turning and judiciously mixing, so as to promote a satisfactory partial decomposition, but no further. It is this undue and improvident decomposition that is mainly to be avoided. Sir Humphrey Davy says that "an immeasurable quantity of substance disposed for conversion into food for plants is suffered to escape in the form of drainings and vapour. During the violent fermentation which is necessary for reducing farm-yard manure to the state in which it is called 'short muck,' not only a large quantity of fluid, but likewise gaseous matter, is lost; so much so that the dung is reduced one-half, and from that to two-thirds or more, in weight." That carbonic acid and ammonia are

disengaged, both capable of becoming nutriment by the attraction of moisture in the soil; in proof he goes on to say that Mr. Coke, the late Earl of Leicester, who farmed a large breadth of light land, has "entirely given up the system of applying fermented dung. . . . That his crops have been as good as ever they were, and that his manure goes twice as far." Having said this much with the view of preventing much unbusiness-like waste of this most valuable of manures, I reluctantly recur to the winter-application of it. I say reluctantly, because I demur to its most profitable application to the soil, if under arable culture, in any way during the season of winter. I do not mean to assert that such soils are not benefited by a dressing of farm-yard manure; but I do say it is a woeful waste of it. Be that as it may, we know that such applications are common, almost general, and under the present order of things appears necessary to the conduct of business. Many fold-yards are so small that it is impossible to make all the manure of the farm in them without carting some away—"clearing the yards." For the most part these clearings are taken in the winter to some convenient spot to form a manure-heap or a compost-heap: under such circumstances this course is commendable; but as Sir Humphrey again says, "The destructive fermentation of

it should be prevented as much as possible. For this end the dung should be kept dry and unexposed to the air, for the moisture and contact with the oxygen of the atmosphere tend to excite fermentation. To protect a heap from rain a covering of compact marl or of a tenacious clay should be spread over the surface and sides of it." In this way much waste would be avoided, and, according to general testimony, if it does not become too decomposed it is in a fine state for application for a turnip crop. If, however, the yard-clearing is taken to form the compost-heap it is of more importance, inasmuch as it is employed as the dominant agent to convert the various matters or substances brought together to form the compost into a valuable manure. For this purpose it should be made the most of. The bottom of the compost-heap should consist of a thick layer of earthy mould or sods; next a layer of manure—it may be of inferior quality; next another layer—rather thin—of sods or other earthy matters, *i.e.*, road-scrappings, ditch-roadings, and the like; upon this should come a thick layer of the best dung from the yards; to be covered with another layer of soil, chalk, turf, ashes, soot, or similar matters, sufficiently thick to prevent much evaporation. Of course if other putrescent or other powerful manures can be added, the compost will be all the richer, *i.e.*, guano, night-soil, salt, shell-fish, seaweed, urine, yard-drainings, &c.; the whole to be turned over as the farmer's best judgment dictates. Under existing circumstances it is almost impossible to define or point to the best application of fold-yard dung to the soil in the winter season, the soils and management are so varied. There can be no question as to the benefit to grass-lands, clover-leys, seeds, sainfoin, lucerne, and the like fodder-cropping, by a top-dressing of farm-yard manure. It not only protects the young grasses, &c., but adds greatly to their productive powers; besides, the dressing is soon appropriated by these growing crops, as the snows and rains cause the ammonia to descend in the absence of heat and drying winds at this season, providing the manure is carefully spread and brushed in. I will venture to assert that the most profitable application of farm-yard manure upon the majority of soils is for the purpose of obtaining the heaviest root or green crops, *i.e.*, turnips, swedes, mangolds, rape, cabbages, kohl-rabi, carrots, potatoes, &c. A good green crop (turnip husbandry) is the true foundation of modern agriculture. It is upon this ground I strongly advocate the retention of the fold-yard manure, in yard or bulk, till required for their crops. But it may be asked, What will you do with tenacious clays? Well, in the first place I would try to ameliorate them by subsoil drainage and powerful team

cultivation, so if possible to adapt them to turnip husbandry, and which I am sanguine enough to believe will, in a great degree, be attained. This done, my course would be easy. I should apply the manures in the spring and summer, to secure root crops. But till this is accomplished, the partial application of manure in the winter must be continued upon all clay lands and strong loams. I should recommend a strong application of the manure from the stables, piggeries, or horse-yards, in February, upon lands intended for beans or peas, to be immediately ploughed in, and if manure is plentiful I would suggest a dressing for the young clover or seeds. It is customary in many clay districts to manure bare fallows for wheat. This appears to me to be superfluous. If the fallowing is deep and good there should be abundance of ammoniacal and chemical constituents, both disengaged from, and absorbed by the soil for a wheat crop. Better to apply the manure as I have said, or for an occasional crop of barley and thin seeds. Mind, I am only writing of the winter application of manure. Upon all light soils I would reserve the manure for summer service, except an occasional dressing when needed upon the thin young clover or seeds, and possibly I might, in an extreme case, top-dress a thin crop of wheat. It is remarkable how soon many of these top-dressings, if properly applied, become food for the young plants; even straw is useful in this respect. The common earth-worm is mainly instrumental in drawing the dressing into the soil at this season. It will be seen from the foregoing that I demur, as I have said, to the application of fold-yard manure to the soil in the winter season. I am fully alive to the convenience and pleasing practice of getting the farm-work forward; but it must not be done at too great a cost. I disapprove of the practice of carrying out and laying a good dressing of rich dung upon wheat stubbles prior to winter ploughing. The vicissitudes of the season will destroy much of its constituents, and heavy rains drain its best values into the subsoil, never more to be reached by plant rootlets. I wholly object to the application of dung in the winter to land intended for the next summer's seeding, and I greatly demur to the like application for a spring crop, such as potatoes, mangolds, or early cabbage. Far better to apply the manure as the planting or setting proceeds. In short, I can only see it right to apply manure in the winter season to grass lands, seeds, young clovers, sainfoin, lucerne, and the like; to thin wheats in extreme cases, and in the latter winter months to land intended for pulse crops, early-sown corn crops, or early-planted root-crops.

THE NEW FARM.

And so I am roused from my literary slumber by a round shot falling right at my feet and splashing me with splintered fragments. A printed enclosure with the Clitheroe postmark! I regret if a playful remark respecting black noses and Culshaw's "Oxford studies" has given annoyance to a gentleman so urbane as I have uniformly found Mr. Eastwood. Opportunely enough, however, it brings one to the discussion of a subject which it is high time to have set at rest. The black nose upon a pedigree Shorthorn is an unpardonable blemish at present in the eyes of the breeding world. That it should be so, thanks to the Yankee, who objected of old to any but the "raw nose;" else what harm could that be which is simply a relic of ancestral inheritance from the celebrated Galloway heifer and Chillingham herd, which

were used so freely in Collings' alloy, and which is continually re-appearing in the oldest and best strains (some great royal prize-takers) of the pedigree stock, as every breeder knows? Names I will not give, as I have no wish to depreciate any gentleman's herd. I will only remark that Belvedere had the defect latent in his composition, and that the Chilton cows abounded with it. The oldest breeders in private converse make no secret of this objectionable nasal tint's cropping up occasionally under most unlikely circumstances. From a scientific knowledge of the dip of strata, Sir R. Murchison amidst the Ural Mountains predicted the finding of the Australian gold fields. By an analogous acquaintance with the elements that underlie the famous Thorndale bulls, it was long ago predicted by a celebrated living Shorthorn su-

thority that an occasional black nose must crop out in that stock. I was not myself at the Havering Park Sale, but have certainly been repeatedly told by competent authorities that Baron Oxford had undoubtedly a smutty nose. Mr. Eastwood did well to have an inquest in the matter, and we will devoutly hope that the shadowy dim spot which is allowed to disfigure the luminary may not spread nor re-appear in his progeny. But as America started the fuss by objecting to "black noses," let it now make the amende honorable, and confess itself hypercritical in the first instance. The emancipation of the Black has been of late their praiseworthy mission. As regards Mr. Eastwood's herd, be they tainted all in this terrible manner, still would they fetch by auction, I do not hesitate to say, the highest average that has been ever obtained. The gentleman who founded the first Towneley herd, and who never meddles with stock of any sort without gilding it, will not suffer from what really is only a vulgar prejudice. I do not mean to say that it would not be better if we could eliminate the dark stain from our herds; but seeing how deeply it impregnates them, I do not hesitate to state that I for one should not decline to breed from an animal of excellent points and fine quality, if his family be distinguished, even though he may appear to have carried printer's ink in his scent-bottle. But to settle the matter more immediately and thoroughly: Messrs. Eastwood and Culshaw—are they not, in the Shorthorn world, of authority to set fashion even equal to that of the Empress Eugenie or the Parisian stage? "Let there be golden hair," and there was golden hair. "Let the eyelids be tinted," and the eyelids were tinted. Her Majesty had only to ordain, and the thing was done. Let our leaders be as resolute, and declare that at least the quadron tint shall not condemn a bovine beauty. And as we are upon the subject, let them issue an edict further that the white colour shall be equally costly with the red and roan; for have they not proved, in the course of their distinguished victories, that the white heifer is usually pre-eminent in loveliness of shape, in grace, in wealthiest quality? Again, are not the very richest roans often the offspring of a white cow? Such, at least, has been my own private experience. To say that the white are more delicate, is simply not fact, as anyone who likes may prove for himself, and as the most experienced breeders and feeders readily allow. To depreciate the cream hue only serves the purpose of a few far-sighted buyers. That Mr. Eastwood is superior to this prejudice is proved by his using that grand white bull the Hero. Speak out, then, upon these points, Messrs. Eastwood and Culshaw: your determination will be law.

Having written so far upon the subject of shorthorns, let me conclude this paper therewith. First, I would avow that my first experience of pedigree shorthorns made me freely condemn them. I unhappily got hold of an invalid sort. There is, however, no occasion for any beginner to do this. The store of sound stylish tribes is now so great that anyone possessing judgment and sufficient funds may soon stock his boxes and fields with a collection of animals that shall be a source of unceasing pleasure to him, as of undoubted profit.

Foremost amidst delight is the gratification arising from chemical studies and experiment. The breeding of shorthorns affords this delight; for, allowed that you begin, as you should, with cows of a similar type and exalted—I had nearly written "fashionable," but that fashion must alter with success—pedigree, there is subsequently no little to be done by judicious crosses and selection in keeping up of the form you approve; for in that respect every different breeder has his special tastes.

Just for amusement, I ran over, last week, to see the conglomerate herd belonging to the late Mr.

Packe sold. Arriving at Loughborough by the first morning train, it was very hard not to take a peep at the Quorn, whose meet was within a mile of the town, as I was informed by my host. However, duty carried the day; and so, after having satisfied the claim of the Minister of the Interior, I trudged three miles to the farm, wishing heartily that I had brought my waterproof, heavy-metalled farm-boots, instead of a gim-crack, elastic-sided pair, that looked like yawning under the influence of the slush of a damp morning. However, arrived upon the scene of action, and before anybody, save some half-dozen neighbouring farmers, I had ample time to cast my eye around. The cows looked exceedingly well, in good beefy condition, as though they had had their calf-meat kept upon them rather than that they had been barley-mealed for the sale. They were a lot of very fine cows, and, being so numerous, and representing so many breeders, afforded a good study for the tyro who could have an able Mentor to point out the characteristic points of each.

There was a wealthy-looking grand-framed cow of the Marjoribank's formation; there were the elegant, aristocratic-looking maidens of Sir C. Knightly's moulding; a useful, thick-fleshed, big matron, bred by Jonas Webb, whose artistic hand, had he lived only a few years longer, would have established a famous kind for both butcher and dairy; there were a few specimens from that keen judge, Mr. Wetherall, with the true ring of his stylish Silver Bell sort; there were a few square-built cows of the much-belauded Waterwitch tribe, bearing in their dewlap the mark of old Vanguard, but with the most cantankerous horns that it is possible to conceive. Above all, however, were the lovely massive Towneley Butterflies. "Them's the pick," I heard a master-butcher remark to his fellow, as with a dainty movement the celebrated White Butterfly wound her way amidst the herd over the bedding of deep muck, to a sweet lock of hay in the corner of the manger, beside a heifer that had recently calved, and to which she whispered, I doubt not, in her own considerate gentle way, a few words of matronly counsel, just as a Marchioness of thirty years might over the cup of tea she was sipping by way of company to the young Lady Maud, whose reclining attitude and pale features were significant of a recent interesting event.

The average, so far as I could make out, was about £37 for the cows; but there was a general feeling that "if Strafford had been there," there would have been a vast improvement in the prices obtained. "That Tattermell of Shorthorns," as the auctioneer of the day handsomely termed him, would certainly have lifted several lots considerably, if only by recounting the story of their blood. But I had to get away to catch the train, only after all to find every bed in Birmingham occupied, owing to some neighbouring races, and the coffee-room crammed with sundry coteries of hoary experts and downy-lipped would-be turfites, who were undoubtedly buying their experience.

And, so, in pleasant company of some experienced Shorthorn breeders, I took the night train, put on a double suit of clothes, and lay down for a restless journey between sleeping and waking, to arrive at home some hours before expected, and so to realise fully in the bright glances that succeeded first surprise the truth of the poet's exquisite lines:

"Tis sweet to hear the watch-dog's honest bark
Bay deep-mouth'd welcome as we draw near home:
'Tis sweet to know there is an eye will mark
Our coming, and look brighter when we come:
'Tis sweet to be awakened by the lark,
Or lul'd by falling waters: sweet the hum
Of bees, the voice of girls, the song of birds,
The lip of children, and their earliest words."

VIGIL.

THE TIPTREE FARM ACCOUNTS.

THE BALANCE SHEET OF 1867.

	PAID. 1865.	PAID. 1866.	PAID. 1867.
JANUARY 1.—VALUATION:—			
Live stock	£2327 13 0	£21144 10 0	£2854 6 0
Poultry	20 0 0	20 0 0	30 0 0
Horses and donkey	124 0 0	154 0 0	130 0 0
Tillages, manure, &c.	472 10 9	501 18 4	469 7 8
Hay, corn, &c. (unsold)	286 4 0	253 18 0	636 13 6
Implements	435 11 6	430 0 0	435 11 6
	£2165 18 3	£2503 6 4	£2565 17 8
Fixed steam engine, irrigation pumps, mill stones, and threshing machine, valued in estate	—	—	—
Corn and hay for live stock, produce of farm, charged at market prices	301 2 0	188 14 0	139 17 0
Corn, cake, malt combs, bran, &c., purchased for live stock	369 7 0	418 3 7	427 16 6
Grinding corn for live stock by our own engine, at the usual prices charged to others	25 15 10	16 0 0	16 15 0
Sundries for live stock	7 19 0	4 4 0	—
Veterinary	1 12 6	—	4 12 0
Medicals	2 16 0	1 15 0	—
Live stock purchased	281 0 0	135 15 11	465 10 6
Plough horse purchased	47 12 6	15 15 0	36 18 6
Horse food purchased from farm	114 0 0	106 16 0	139 17 0
Doitto purchased elsewhere	15 0 0	42 1 0	56 17 0
Farm labour, including engine driver and working bailiff	396 16 11	353 12 5	432 18 6
Rent of chapel land, 46 acres	45 0 0	45 0 0	45 0 0
Tithes, taxes, poor, highway, church, and county rates	83 4 5	84 2 7	83 0 10
Reserve for wear and tear and depreciation of machinery and implements	25 0 0	25 0 0	25 0 0
Coals for steam engine	51 10 0	31 7 11	34 14 1
Tradesmen's Bills:—Wheelwright, blacksmith, founder, harness maker, bricklayer, carpenter, painter, basket maker, cooper	57 8 0	41 8 11	74 12 9
Malt and hops for beer for labourers	22 0 0	21 9 6	25 0 11
Seeds and plants purchased	33 1 4	29 15 9	63 9 10
Doitto of our own growth	29 7 0	42 19 0	35 4 3
Purchased manures	110 17 10	78 0 0	117 18 5
Doitto straw	16 8 0	6 0 0	—
Miscellaneous Petty Expenses:—Mole and rat catching, mending sacks, postage stamps, stationery and farm account books, oil, candles, cart grease, tallow, packing for engine	8 1 10	5 10 0	3 15 0
Thatching	7 15 0	5 9 0	5 13 0
Thatching stuff	1 3 0	1 0 0	1 5 0
Corn blowing machine	—	1 1 0	—
Sheep troughs	—	2 10 0	—
Hired horse work	—	—	3 11 6
Doitto threshing work	—	—	6 14 6
Grinding corn at our own mill for our farm horses	—	—	9 2 6
	£2408 15 5	£2455 16 11	£2490 2 3
DECEMBER 31.—VALUATION:—			
Live stock	£21144 10 0	£2854 6 0	£21066 18 0
Poultry	20 0 0	30 0 0	28 0 0
Horses and donkey	154 0 0	130 0 0	167 0 0
Tillages, manure, &c.	501 18 4	469 7 8	612 10 6
Corn and hay, &c., unsold	253 18 0	636 12 6	558 6 0
Implements	430 0 0	435 11 6	425 11 6
	£2503 6 4	£2565 17 8	£2656 6 0
Corn sold for money	601 5 10	478 19 9	1186 11 2
Corn and hay sold to live stock as per contra	301 0 0	188 16 0	139 17 0
Peas (for picking) sold	44 0 0	2 0 0	41 5 0
Home-grown corn used as seed and charged per contra	27 2 0	42 19 0	36 4 3
Oats, beans, and hay, home-grown, sold to our horses, and charged per contra	114 0 0	105 16 0	139 17 0
Hay sold	72 17 0	10 2 6	130 1 6
Mangel roots and seeds sold	39 17 6	91 10 3	1 3 0
Horse work on hire	—	—	6 13 9
Meat sold	813 1 0	1123 7 11	873 2 2
Wool sold	19 10 0	54 1 1	23 5 0
Poultry and eggs sold	41 10 9	43 15 0	49 5 5
Grinding for hire	73 15 4	32 5 3	32 0 4
Grinding for own stock	25 15 0	16 4 0	16 13 0
Grinding for horses as per contra	—	—	9 2 6
Milk and butter	11 5 0	12 0 0	12 10 0
Rent of cottages	15 17 0	15 17 0	15 17 0
Dead horse	—	0 15 0	—
Horse sold	—	—	2 9 0
Received for sundries	—	—	5 5 0
	£24707 2 9	£24784 8 5	£25577 8 1
Paid	4208 15 5	4255 16 11	4949 2 3
Balance for rent of 128 acres and profit on farm capital	£2498 7 4	£2338 11 6	£2728 5 10

* And straw in 1867.

LIVE STOCK.

	PAID. 1865.	PAID. 1866.	PAID. 1867.
JANUARY 1.—To valuation of bullocks, sheep, pigs, and poultry now in hand	£247 13 0	£1164 10 0	£284 6 10*
Hay and corn purchased from our own farm at market prices	301 2 0	188 14 0	139 17 0
Corn, cake, malt combs, bran, &c., purchased elsewhere	369 7 0	418 3 7	427 16 6
Grinding corn by our own engine	25 15 0	15 0 0	16 15 0
Veterinary medicine and sundries	12 7 6	—	4 7 6
Live stock purchased	281 0 0	185 15 11	465 10 6
	£1837 3 6	£1972 3 6	£1938 13 4
Balance	204 8 3	114 8 6	114 5 3
	£2041 11 9	£2086 12 0	£2052 18 7
DECEMBER 31.—	RECEIVED.	RECEIVED.	RECEIVED.
Meat sold	£213 1 0	£1082 9 11	£273 9 2
Wool sold	19 10 0	54 1 1	23 5 0
Poultry, eggs, and milk sold	44 10 9	55 15 0	61 15 5
Valuation of bullocks, sheep, and poultry in hand at market prices	1164 10 0	884 6 0	1094 18 0
	£2041 11 9	£2086 12 0	£2052 18 7

It is worthy of remark that our seven farm horses have consumed also several acres of green crops.

Hay and corn	£198 14 0
Grinding corn	9 2 6
Chaff-cutting	10 0 0
	£217 16 6
Shoeing, repairing harness	10 0 0
Three horsemen	110 0 0
	£337 16 6

While our engine of 6-horse power, with an 8-horse Cornish boiler, has worked 177 days, and has only cost £34 14s. 1d. for food (coals), and under £3 for straps and repairs. The work done by the engine in 177 days could not have been done by seven horses in 300 days.

ENGINE.	
Coals	£34 14 1
Driver: 177 days, at 2s. 6d.	23 2 6
Repairs to driving straps and engine, oil, &c.	3 0 0
	£59 16 7

Balance in favour of engine £270 19s. 11d., besides the cost of green crops. We burn dust coal or screenings, which cost 10s. 6d. per ton at Maldon.

I am often told by my farming friends, in a desponding and deprecatory tone, "Oh! I never saved a shilling by farming;" but they do not always add, "I have fed, housed, clothed, and educated my family out of the profits of the farm." How many traders and manufacturers have succeeded in doing more than this?

In this balance sheet, whatever has been had from the farm has been paid for at the wholesale market price. The house is, of course, rent free, which should be taken as an addition to the profit of $1\frac{1}{2}$ to $1\frac{1}{4}$ per cent.

The annual valuation is made, not at cost price, but at the actual market value for the time being. In fact, stock, tillages, &c., are all valued according to the custom of the county, as though a new tenant was coming into occupation.

Average price of Wheat	per qr.	Capital.	Profit on Tenant's Capital at Tiptree Farm
1865	40s. 2d.	£2165	£238 = 11 per cent.
1866	46s. 6d.	2503	268 = 10 $\frac{1}{2}$ "
1867	61s. 7 $\frac{1}{2}$ d.	2571	463 = 18 "

TENANT'S CAPITAL ACCOUNT.

	Dr.	1866.	1867.
Dec. 31.—Sundry unpaid accounts owing by the farm			
Farm Capital:—	Cr.		
Valuation on the 31st December		£2561 17 6	£2858 6 0
Cash in hand or at banker's			
Outstanding unpaid accounts owing to the farm			

APPORTIONMENT OF FARM CAPITAL.

	1866.	1867.
Live stock	£6 0 0	£6 10 0
Horses	1 0 0	1 0 0
Tillages, &c.	2 10 0	3 10 0
Implements and machinery	3 10 0	2 10 0
Hay, corn, &c., unsold	3 0 0	3 5 6

Tenant's capital per acre ... £15 0 0 £16 15 6

ANNUAL COURSE OF CROPPING.

	1865.	1866.	1867.	1868.
	Acres	Acres	Acres	Acres
Wheat	42	55 $\frac{1}{2}$	56 $\frac{1}{2}$	72 $\frac{1}{2}$
Barley	13	12 $\frac{1}{2}$	11	6 $\frac{1}{2}$
Oats	14 $\frac{1}{2}$	12	7 $\frac{1}{2}$	6
Peas	17 $\frac{1}{2}$	6 $\frac{1}{2}$	13 $\frac{1}{2}$	6 $\frac{1}{2}$
Red clover	8	8 $\frac{1}{2}$	17	7
White clover	13 $\frac{1}{2}$	20 $\frac{1}{2}$	12 $\frac{1}{2}$	15
Permanent pasture	14 $\frac{1}{2}$	14 $\frac{1}{2}$	14 $\frac{1}{2}$	14 $\frac{1}{2}$
Sewaged Italian rye-grass	12 $\frac{1}{2}$	12	12	11 $\frac{1}{2}$
Mangel wurzel	16 $\frac{1}{2}$	10 $\frac{1}{2}$	9	7
Cabbage	3	1	1	—
Winter tares for feed	6	6	4	6 $\frac{1}{2}$
Carrots	—	1	1	—
Swedes	—	—	1	—
Available acres	160	160	160	160 $\frac{1}{2}$
Cabbage after tares, second crop, same year	6	3	5	6 $\frac{1}{2}$
White turnips and rape after peas, second crop†	8	8	6	—
White turnips after peas, second crop	—	—	—	7
Swedes after tares, second crop	—	3	—	—
Swedes after white clover fed off	—	—	—	7 $\frac{1}{2}$

Available acres	160
Fences, ditches, and road	5
Ditto on my own farm	7
Buildings, stackyard, &c.	2
Private house, garden, and shrubberies	3

Total (landlords' measure) ... 177

CORN, &c., SENT TO MARKET. 1867.

White wheat	£296 5 9
Red wheat	240 8 6
Bevet Wheat	130 4 0
Barley	122 5 0
Peas	66 0 2
Oats (sold to horses except)	0 7 0
White cloverseed	24 15 0
Potatoes	16 5 9
	£1186 11 2
Green Peas	41 5 0
Sold for money	1227 16 2
Corn and hay sold to live stock and farm horses	279 14 0
Corn used as seed	35 4 3
	£1542 14 5

REMARKS ON THE BALANCE SHEET OF 1867.

The result is more favourable than that of the two preceding years, owing to the crop being better and the price higher than in 1866. The advantages arising from draining, deeper cultivation, and ample manure were in 1867 particularly striking.

* Owing to the high price of barley I have scarcely had a pig for two years. I have thus avoided considerable loss.

† Where white turnips are taken after, the peas are removed directly they are cut, and made on another field. This gives more time for turnips.

Labour was dearer in 1867 than in 1866, so were horse-corn and feeding-stuffs. The farm continues to gain in fertility. Sheep were valued at a much lower price than last year. In 1867, owing to the high price of corn, cake, &c., the live stock account only leaves about £4 per acre to pay for root and green crops consumed. The depression in value of sheep had also something to do with it.

In 1866 the live stock left about £8 10s. per acre for the root and green crops consumed, after paying for all purchased food. In 1866 they only paid £5 per acre, because corn, cake, &c., were all dearer than in 1865, although meat was, if anything, rather cheaper. The labour attendant on stock is charged in the general labour account. If it and the engine, coals, &c., were charged to the live-stock account, very little would be left for the green and root crops; and yet I consider it is this great consumption of purchased food and consequent manure that makes the farm pay: without it, it would not pay.

The tillages comprise the cultivation, seeding, and manuring. Our preparation for the mangel crop, including rent, &c., costs about £13 per acre. Beans are also well manured; so are cabbages. The land for mangel and cabbage is always deeply trench-ploughed after being manured. The preparation for mangel is always before Christmas. Wheat is manured for with 2 cwt. of guano, and some salt when taken after beans, roots drawn off, or wheat. Peas are taken after two years' Italian rye-grass. White turnips on the light land are fed off early, and followed by either wheat or barley. At present we see no mode of farming this land likely to be more remunerative than our present system. Much straw is used as food cut into fine chaff and mixed with pulped roots, ground corn, rape, linseed or cotton-cake, malt combs, and bran. Our farm horses have all their food prepared and comminuted. They are rarely turned out, except sometimes at night during harvest.

The practice on my farm is based upon the theory that the

growth of corn and other agricultural products is made to depend upon the making of meat. There is a great advantage in this system; for when corn is at a low average price I sell it to my live stock, and thus increase my store of manure, and *pro tanto*, prevent over-stocking the corn market. I have observed that when wheat is cheap meat is dear, and *vice versa*. In 1865, when Revett wheat was only 36s. per qr., or 1s. per stone of 14lbs., I ground it up for my bullocks, mixed with other substances. In 1866, with the same wheat selling at 55s. per qr., I sell it to the miller or factor, because, meat being rather cheaper than in 1865, it would not answer at such an improved price to consume it. The same remark holds good for barley. We invariably consume all our beans and oats—sell them, in fact, to our stock. This high system of farming keeps the land always ready for a good breadth of wheat when it is dear, and forces maximum crops at all times. I entirely dissent from the modern theory that we must make meat only, and depend on foreigners for our wheat. On the contrary, I grow more wheat and make more meat concurrently. This I have proved to be a sound and profitable practice.

The foregoing live-stock balance-sheets confirm in a remarkable degree my celebrated live-stock balance-sheet, that created such a *furor* in 1851 (see p. 188 of my book). They prove that if you charge the live-stock account with the cost of green and root crops, attendance, labour, interest of capital, rent for shelter, in addition to the purchased food (as was all done in the 1851 balance-sheet), the live-stock accounts will show a considerable loss. In the present balance-sheet these expense are charged in the general farm account. That live-stock account was almost as favourable as my recent ones, taking into account the enormous quantity of purchased food. The wisdom of those large investments in purchased food is confirmed by the very much greater consequent yield of every crop.

February, 1868.

J. J. MECHL.

THE SUPPLY OF ANIMAL FOOD TO BRITAIN, AND THE MEANS PROPOSED FOR INCREASING IT.

Mr. W. LASCELLES SCOTT, F.A.S.L., F.R.S.S.A., read a paper at the Society of Arts, on Wednesday, in which he said: It is remarkable that even Londoners, who consume a larger proportion of animal food, as a rule, than is accorded to the other nine-tenths of the population, do not get the necessary quantity, or anything approaching to it; the meat-deficiency, for the metropolis only, amounting to upwards of 102,000,000lbs. at the lowest computation. In round numbers, I consider that Great Britain, to be well and rationally fed, requires an addition to her meat supplies of fully 3,544,330,000lbs. annually. What amount of animal food is actually available is a somewhat formidable question, and one, too, upon which opinions differ pretty widely; however, if we make a rule of taking the lowest rational figures for our requirements, and the highest for our supplies, our general deductions therefrom must certainly be under the truth. In furtherance of the objects of my future work, I have necessarily been at some pains to acquire information of the ordinary food-produce of this country, and I cannot help observing that there are few things more difficult to obtain, or more unsatisfactory when you have got them, than British agricultural statistics. Various opinions have been given as to the number of animals slaughtered for food per annum, and the quantity of "butchers' meat" yielded by each variety; some of these are so extravagant as to be without the pale of rational hypothesis altogether. Care, inquiry, and comparison of actual results have led me to believe that, taking one animal with another, the annual number slaughtered cannot exceed 23 per cent. of the existing live stock. Cattle, sheep and lambs, and pigs, I consider, yield 400 lbs., 45 lbs., and 60 lbs. each of trimmed meat, and therefore that only 1,281,468,000 lbs. can be available for consumption in the British Isles during the present year, or less than 2 oz. of meat (including bone and fat) per head of the population per diem. There are, without doubt, numerous obstacles in the way of a fair estimation of

the amount of animal food available for consumption in this country; but if we take London as being certainly found in the possession of a larger amount of animal food than any other tenth part of the population, and yet find it to be lamentably deficient in its meat-supplies, it is not too much to say that the entire country is in a state of mitigated starvation. There is a section of the public, which, doubtless, has some representatives here to-night, who cannot grasp this fact; they consider it would be simply monstrous if it did exist; and so the kindly "wish being father to the thought," it of course cannot be; figures, which but few people sake the trouble to go into, can be so easily exaggerated. Some few of our popular writers, too—I could point to several instances—have unconsciously done harm by impressing the popular mind with graphic descriptions of the enormous quantities of food—some of it brought from the uttermost ends of the earth—consumed by great cities, without, at the same time, exhibiting the utter inefficiency of the same to supply the real requirements of our "teeming millions." In the consideration of supply and demand, prices will help us considerably, and we may derive some little instruction from a comparison of the cost of meat some years ago and at present. I do not mean the time (1490) when "3 sheeps" could be bought for a crown, a "lambe" for sixteen pence, and "6 pygys" might be obtained at the very moderate figure of two shillings, while a "bushell of wheate" cost ten-pence halfpenny. But say we begin with 300 years later. In 1789-90, according to Mr. Arthur Young, our prices for animal food were:

Beef	3½d. to 3½d. per lb.
Veal	3½d. "
Mutton	3½d. "
Pork	4½d. "
Butter	8½d. "
Cheese	4½d. "

While, at the same period, the market value of the services of that favourite Parliamentary standard, "the Dorsetshire labourer," amounted to 1s. 4½d. per diem. I need not dwell much upon later prices; but to bring the figures down to our own time, I will insert here a brief note of the London market prices of last winter, and those of seventeen years ago.

Description of Meat.	Prices per 8lbs.			Prices per 8lbs.			Mean inc. in price.	
	Winter of 1850-51.			Winter of 1866-67.			Per 8lbs.	Per cent.
	Min.	Max.	Mean	Min.	Max.	Mean		
Beef ...	2 6 4	0 3 8	3 6 5	2 4 4	1 1 4	33.3		
Mutton ...	3 0 4	4 3 8	3 10 6	2 5 0	1 4 4	36.3		
Veal ...	3 8 8	8 3 2	4 6 5	6 5 0	1 10	57.9		
Pork ...	3 0 3	8 3 4	3 2 4	2 3 8	0 4	11.1		

By which we see that beef and mutton have increased in price 33.3 and 36.3 per cent. respectively, in about the sixth of a century. At this rate, where should we be in 1968? I was speaking on this subject to a friend, not long ago, when he remarked, "Why don't the people eat fish, if meat is so dear and so scarce? I have seen more fish thrown away, or allowed to decay for manure, within a few days, than would be required to keep Southampton in animal food for a month." And this observation brings us to another subdivision of our subject, the supply of fish. Here, again, the same melancholy story holds good—the supply is but a fraction of the demand; while, in addition, we are forced to the humiliating confession that many thousands of tons of fish are being thrown away and absolutely wasted after they have been caught, in a country where 28,000 people die annually from insufficiency of food. Moreover, it is not only that fish, as a rule, is dear now, as compared with former times (when it was by no means uncommon for articles of indurate to contain a clause stipulating that the apprentice was not to have salmon for dinner more than two or three times a week), but we have the anomaly constantly occurring of a starving population in one part of the country, simultaneously with the absolute destruction of many tons of nutritious food in another. From personal inquiries, and information I have specially collected, I am of opinion that our English, Scottish, and Irish fisheries might be, if carefully and judiciously developed, increased to 3, 2½, and 5½ times their present degree of productiveness respectively, while at the same time it would be possible materially to decrease the number of able-bodied paupers in the three kingdoms. Another variety of animal food—that derived from the feathered tribe—calls for a passing notice at our hands, but chiefly we may observe how small a proportion it bears in comparison with meat and fish. My estimates are that London consumes nearly 22,000,000lbs. of poultry (including larks) annually, and that the entire kingdom does not account for more than 26,500,000lbs.; except as a speciality, therefore, we may fairly ignore birds almost completely in reckoning up the nation's food. Something like 1,300 millions of eggs are annually consumed in the United Kingdom, and I have no doubt but that quantity will steadily increase for some time to come. Reverting for a moment to animal food as a whole, there are yet two points upon which I hope to acquire much information to-night from the practical authorities present in this room. The first is, of the insufficient supplies accorded to us, and credited in the national food account, how much is destroyed or rendered useless before it reaches our mouths? In a communication I had the honour of making to this society in 1861, I stated this quantity in the metropolis to be about 9.5 per cent., and later inquiries have not modified this opinion, considering bad meat (from all causes) as waste, whether it is actually destroyed or not; taking the entire country, however, this proportion may be lowered to 7.25 per cent., according to my calculations. The other question referred to just now is this—In what manner is a country affected by a supply of animal food totally inadequate to its requirements? Now comes the question—How can we most readily increase the supply? 1st, What margin is there for the development of our own beef and mutton? The area of the United Kingdom amounts to 77,394,433 acres, which is made up in this manner:—

Country.	Area capable of Cultivation.		Total Area.
	Acres.	Acres.	
England	29,089,000	32,342,000	
Scotland	11,118,000	19,738,890	
Ireland	17,025,290	19,441,744	
Wales	3,847,000	4,758,000	
Channel Islands	549,890	1,119,167	
Total	61,522,970	77,378,831	

Mr. Joseph Fisher, of Waterford (to whom I beg to express my appreciation of his great courtesy), puts the case thus, taking 61,000,000 of acres suitable for cultivation: "If about one-half of the area were farmed on the four-course system, it would give annually about 20,000,000 acres of grain, 10,000,000 acres of green crops, and 10,000,000 acres of clover. If the portion under grain produced only three-quarters per acre, and that one-sixth were deducted for seed, it would leave 50,000,000 quarters for the support of a population of 30,000,000. We should thus be independent of foreign countries for our supply of grain. Then as to meat. If each acre produced 20 tons of green crops, and that each ton of turnips yields 14lbs. of meat, then the green crops would produce 2,800,000,000 lbs. of meat, or at the rate of 90 lbs. for each person, being three times as much as is now consumed. This would leave 10,000,000 acres of clover, 21,000,000 acres of arable pasture land, and 16,000,000 acres of waste land for rearing cattle and sheep, and producing milk and butter." A consummation devoutly to be wished for; but, during the next few generations, it is somewhat doubtful as to where the capital would come from. We may, it is true, slowly improve our meat production; but, simultaneously, our increasing requirements will grow at a quicker pace. Turning to our neighbours for assistance will do but little good, I fear, as long as the present system of transit arrangements and packing continues. Moreover, there are not too many who can afford to send us meat at all sufficiently near at hand to do so at a moderate cost. There appear to be more symptoms of a diminished than of an increased foreign supply for the future. The cattle plague, and the necessary restrictions its ravages have called forth, have doubtless exercised exceptional influences, which, however, are now passing away; but if Norway, Belgium, and the Netherlands have, in point of fact, a deficiency of meat, rather than a surplus, it is plain that any we may obtain can only be brought here by the superior attraction of British gold; in other words, that it will be difficult to get cheap meat from those countries in quantities sufficient to produce any appreciable difference in the consumption of animal food here. Italy is not likely to be able to help either herself or anyone else for some time to come; but Prussia, Austria, and France may do good service, if on our part we turn our attention to transit and market arrangements, both of which require strict supervision. In the first place, if foreign animals are to be imported at all, it is clearly our duty to provide for their health and comfort—on which the nutritive value of the flesh so entirely depends—in the best possible manner, which is certainly not done at present. I could multiply instances of the deaths and diseases among live stock, produced by stormy weather, in combination with arrangements which can only be likened to the "horrors of the middle passage" in the old slave-trade period; but as it is a bad plan to make statements which some people might think exaggerated, while there is a chance of shifting the responsibility on to the shoulders of somebody else, I refer you to the paper of Mr. C. S. Read, M.P., delivered at the Central Farmers' Club not long ago. Another drawback upon the importation of animals from abroad, is the danger of importing a host of diseases as well, besides making the cattle plague chronic in this country. For this the remedies have been already proposed, and may be defined thus: A thorough system of inspection, a moderate quarantine, and, lastly, the establishment of special foreign cattle markets at the chief ports of entry. As the only instance we need consider, to begin with, let us take London. I have been at some pains to ascertain the main features of the existing state of things, and I can hardly conceive that, except where petty interests would endeavour to blindfold common sense, any opposition could be shown to the reforms so greatly needed. As regards the position of the proposed market, various suggestions have been made; but, although I have carefully and independently considered, upon their own merits, all that have been laid before me, I have no hesitation

in giving the preference to the site proposed by Mr. James Odams, consisting of fifteen acres, situated on, and with six hundred feet of frontage to, the Thames, and with a like frontage to the Great Eastern Railway. Under the most favourable circumstances, however, I think it must be admitted that the importation of live meat (if I may use the expression) will never increase sufficiently to supply the wants of our population, unless we go further off to obtain it, and this I am decidedly of opinion is simply impracticable. The difficulties, disadvantages, and expenses attending the shipment of animals from short distances only, form a serious tax upon the result, and any extension of the sea voyage could only increase the catalogue of evils we have previously touched upon. A question now concentrates into one sentence—how is meat, or any similar product, to be prevented from undergoing that curious change we call putrefaction? According to the records of the Patent Office, it would appear that nothing could possibly be easier—in fact, that there are several hundred ways of doing the thing; but, unluckily, in the great majority of instances, patent specifications are of about the same value as their waxen seals, a very moderate percentage of them being of any real utility, while they have not brought us any meat worth speaking of up to the present time. It would take an entire session of this Society to describe at length the various processes for the preservation of food which have been suggested from time to time; but there are several which are, in my opinion, likely to prove of very great utility. In the long run, however, no one could live healthily on creosoted food, while the ordinary salting process robs meat of a too large proportion of its organic and mineral constituents, and renders the flesh itself hard and indigestible. Numerous modifications of the curing processes have been suggested, and one which has been patented several times over offers some advantages; it consists mainly in injecting brine into the veins and arteries of animals immediately after slaughtering them, the entire capillary system being thus quickly and effectively permeated with salt, thus avoiding the waste of the brine-tub process, which Dr. Marcet was at such pains to utilize. He found that a very large quantity of albumen, an important substance called kreatine, and other soluble principles, were always left behind in the liquor when meat was salted, and he endeavoured to recover them by a process called dialysis. The attempt was only partially successful, but it led to a valuable suggestion, viz., that meat, previous to salting, should be enclosed in a membrane of some kind, such as bladder or parchment-paper. By this simple plan much nutritive matter can be retained in the meat, which is cured quite as effectually. In drysalting, various herbs, spices, &c., are often rubbed in with the powdered salt, as a means of varying the flavour. Tropical climates, however, test the powers of any preserving process, and accordingly we find that salting affords but little protection against the oxidising and fermentive powers of an Indian sun. In many parts of India, and in some of the southern states of America, it is found necessary to modify the ordinary salting process, which is there conducted in this wise: A hole is dug in the ground about five or six feet deep, and carefully lined with boards; in this the meat and salt are closely packed, and over all a layer of boards is placed afterwards, covered with earth or mud: this is the favourite system in South Carolina, where, according to Mr. H. Clark, meat is often kept thus for many weeks. An Italian process has been brought before the French Academy lately, in which the preservative composition is a mixture of alum and gum-benzoin, both powdered, in which the meat is laid. In the case of beef it was reported to answer, but the mutton was but imperfectly preserved. Of the chemical antiseptics, there is at the present time but one which appears to possess the necessary qualifications for preserving meat cheaply, easily, effectively, and without either injuring the nutritive qualities or imparting an unpleasant flavour: I allude to the bisulphite of calcium, or, as it is commonly rendered, the bisulphite of lime. I should like to ascertain the opinions of this society, particularly upon the following points: 1. Whether it would be advisable to take steps for the establishment of a ministerial department for the cognisance of food and agriculture, similar to that existing in the United States; 2. What arrangements for the separation of foreign cattle and other animals would be the most convenient one; and 3. What experiments, upon a practical scale, should be instituted, in order to determine the best method of applying the bisulphite of

calcium process, or any other, to the importation of meat from Australia, South America, and elsewhere, in a sound and wholesome condition.

Mr. RUDDIN estimated that the waste which occurred in establishments where ten persons were provided for was sufficient for the support of at least four additional people; and in the private establishments of merchants engaged in business in London two or three dogs were often kept on the bones and remains of meat sent from the table, which would furnish nutritive soup for a great number of people. The true secret of economy in this respect was the "stock pot," which was to be found in every French house, although it was a very difficult matter to introduce it into this country. Passing to the subject more immediately before them, the author of the paper had touched upon a question on which he (Mr. Rudkin) had personally had some experience—that was the supply of foreign meat to be consumed in London. He was connected with the Corporation of London, and had had under his charge, with others, the regulations affecting the supply of foreign cattle for the metropolitan market. His own opinion was, that any attempt to place restrictions on the importation of foreign cattle into this country would have the effect of increasing the price of meat, and the attempts now being made to establish a foreign cattle market separate from the English market were, in his judgment, most unwise; nothing could bring cheap meat but free and open competition. If they had foreign cattle in one market and English cattle in another, they would cease to have that open competition which existed at the present time. If they looked at the statistical returns, they found that during a certain portion of the year there was a large supply of cattle from abroad; and during another portion we received comparatively few. The result was, that at the Copenhagen Cattle-market the English animals had, practically, the monopoly of the supply during a part of the year; and at this season the price of meat was invariably high. During the autumn, from Midsummer-day to the middle of November, there was an immense influx of foreign cattle, which had a great effect in reducing the price of meat. The statistical returns for the last twenty-five years showed that this was so. The consequence of the regulations imposed by the Orders in Council in respect of the late cattle plague was to cause a large number of animals to be slaughtered in Germany and other places on the Continent, and the effect of that on the market here was that for three or four days in a week there was an immense influx of this poor quality of beef and mutton, a large quantity of which arrived in bad condition, and had to be destroyed. His own opinion was that under the system of unrestricted competition the English producer would get a better average price for his meat than he did under existing circumstances. It would be better, also, for the foreign producer, because it opened to him a certain market for his produce. The meat would not be destroyed by the action of the weather, and the result would be a more constant and better supply for the consumer.

Mr. B. VENABLES hoped this subject would be dealt with by the Government in such a way that the people of this country would see that they were being treated in the fairest manner on the important question of increasing the supply of foreign cattle brought to the country. One point was of especial importance, viz., the mode of transport of cattle from abroad to this country. He thought the Government should interfere to have vessels so constructed as to mitigate to the fullest extent the great loss of animals which frequently occurred on the passage; such a saving of the lives of the cattle would be a great public benefit. He trusted we should never return again to the days of protection. If we had had protection during the last twelve months, he was convinced the price of meat would have been tenpence or a shilling per lb. The immense importation of foreign cattle had alone tended to keep down the price; and if we attempted to put restrictions of any kind upon the foreign producer he would send his cattle to those countries where there was a free and open market for them. He was certain it would be prejudicial to the community if a separate market for foreign cattle was established in another district of London, because the animals would be sent there for the purpose of being slaughtered, and the consequence would be to throw the trade into a few hands, and competition would be destroyed, while the live market would be practically monopolised by the English producer. We were only now recovering from the effects of a serious disaster amongst the cattle

of this country, and though there was no doubt the disease was brought from abroad, yet they found it prevailed in parts of the country where no foreign cattle ever approached, and that remark especially applied to the establishment of Miss Coutts, where they might suppose every possible precaution against infection was taken, yet the disease found its way there. That visitation he trusted had now ceased in the country, but he ventured to express a hope that a greater mischief would not be introduced by placing restrictions upon the foreign cattle trade.

Mr. PAYNE said: There was at the present time on foot what he considered a dangerous movement for a new and separate market for foreign cattle. He felt persuaded if that were carried out the effect of it would be to make meat dearer. The question was, would there be, in the proposed new market, any live market at all; would it not be converted into a large abattoir? Only a few large dealers would then buy the meat, and it would not meet the wants of the butchers who only killed their three or four bullocks per week, because all the animals must be slaughtered on the spot. The result would be that a few of the large carcase dealers would purchase at their own price and prevent competition. That was giving an advantage to the English producers, which they ought not to have in the interests of the general community. The necessity of providing markets for the people was another question, which required a good deal of consideration. He believed they could not do better for the masses of the people than to give them the fullest advantage of the coostermonger system. Let the coostermonger have free scope, and he would serve the people at the lowest possible prices; but if they placed difficulties and restrictions in his way his prices must be raised. He believed if new markets were formed they would be failures.

Mr. DIXON remarked that so much had been said with regard to the unrestricted admission of foreign cattle, that he thought the question as to how the home supply was to be protected from disease should not be lost sight of. It was generally admitted that the rinderpest came from foreign countries, and it was known to have existed in Hungary and Russia from time immemorial. We wanted every head of cattle that could be brought from abroad; but care must be taken to have them in a state so as not to bring disease among our own home stock. On the subject of the importation of dead meat from abroad, he submitted that thousands of carcasses were sent from Aberdeen to London, where they arrived in good condition for the market; there were equal facilities for bringing dead meat from the continental sources of supply, and he believed it was a matter of indifference to the foreign producers whether they sent the live animals or the carcasses to this country, so long as they obtained fair prices for their produce. The great question was to increase the supply of meat, both home and foreign. If the proposed plan of slaughtering foreign cattle at the spot where they were disembarked would prevent the risk of another visitation of disease, it was the duty of every Englishman to hold up his hand for it. He did not agree with Mr. Rudkin that the price of meat was lower during the season of the latest importations of foreign cattle into London. Butchers would tell them that the cheapest time for meat was in the spring of the year, when foreign meat did not come in, because they then got a larger number of English animals, who carried a greater weight of flesh. He submitted it was their duty to do all they could to prevent the introduction of disease among our home-stock, and at the same time to encourage as much as possible the importation of foreign supplies. The foot-and-mouth disease of cattle, as well as pleuro-pneumonia, had almost disappeared in this country, and he had no doubt the restrictions placed upon foreign cattle had greatly tended to that result, and it was to be remarked that the price of meat had gone down since those restrictions had been imposed. This was a question which ought to come before Government, and he hoped it would be fairly argued and dealt with in a practical manner for the benefit of the community at large.

Mr. MORRIS said, being connected with Australia, a part of the world where they had a surplus of cattle, he had been much interested in the subject brought before them this evening, but he must say he hardly thought the author of the paper had solved the question of how they could successfully bring dead meat to this country from such distances as Australia and the River Plate. The importance of the figures laid before them could not be over-rated, for if the average consumption of meat in this country was only 3½lbs. per head

per week, while in Australia it was 10lbs.—(the rations served to the labouring men were 15lbs. per head)—to feed the people of this country at that rate would consume the whole stock of Great Britain in one year. That fact alone showed that the people here were not sufficiently fed, and he might say he had been much disappointed with the physical appearance of the labouring population here. Contrasted with the same class in Australia, they were pignics, even in comparison with those who had been only a few years in that country. These facts showed the necessity for introducing into this country large supplies of food. He begged to inquire, with reference to the specimens of meat preserved by the bisulphite process, whether the experiment had been carried out on a sufficiently large scale to warrant the application of it to meat sent from Australia to this country, and he ventured to submit that if preserved in liquid, whatever the process might be, the meat would lose its flavour. Anyone tasting the meat on the table would find it was without flavour, which he thought arose from its being preserved in some fluid. The great point was to know whether the process had been merely applied to single joints, or whether it was one which could be employed for a large bulk of meat packed closely, so as to admit of its being carried out on a scale that would make it commercially remunerative. He did not agree with the author, that meat from the Plate or Australia could be sold in this country at 2½d. per lb.; he thought the price was likely to be nearer 4d. per lb. He would be glad to hear the grounds on which the author of the paper had arrived at the conclusion that meat frozen lost its flavour, and was liable to rapid decomposition when thawed. If the temperature was lowered below 32° the movement of the particles was arrested, no fermentation could go on, and the meat remained in exactly the same condition as when it was first frozen. This was shown in the remains of animals discovered in Siberia. It appeared that no one had thought of enclosing the meat in vessels, and then submitting it to the action of cold. If that were done, he would guarantee that the meat would remain in the same condition and retain its flavour. He had himself tasted meat which had been for twelve months without being in contact with ice, and it was the same as if it had been fresh cut by a butcher. He would also be glad to hear Mr. Scott's grounds for the conclusion that frozen meat deteriorated more quickly on being thawed than meat which had not been frozen. If the meat had been allowed to remain in contact with moisture while being frozen, this might occur. It was a subject of the greatest importance that some means should be devised of sending meat from Australia in good condition to this country. It was of better quality than most English meat, for the Australian beef and mutton were of richer flavour than those of this country, so much so, that since he had been here he had been struck with the insipid character of the meat, as compared with that of Australia. Meat intended for exportation should not be over-driven just before being slaughtered. The animals taken to Sydney had to be driven a hundred and thirty miles almost without food, and that tended to set up a feverish condition, so that that meat would not be proper for exportation; but in the districts of Queensland, Victoria, and New Zealand, there were exhaustless supplies of good meat, if only they could discover a means by which it could be brought into the markets here.

Mr. GRAHAM, in reply to the inquiries of Mr. Morris, with regard to the bisulphite of lime process, said the joint of meat alluded to had not been prepared for shipping purposes, but was merely produced to show what was the effect of dipping the meat into the liquid for only a short time. In the importation of meat from Australia and other distant countries, the patentees had not as yet had much experience, but they hoped to find out the least amount of treatment which would effect the object they had in view. He believed if carcasses of meat were to be sent from Australia the injection process would have to be resorted to.

Mr. JONES thought the current of thought should be directed rather to the increase of the quantity of the home production than to bringing meat from abroad. He had under his own management a few acres of land, on which were formerly kept only five head of cattle; he now kept nineteen; and if that same increase was made general, we should be independent of foreign supplies of meat, as well as, in a great measure, of grain; inasmuch as the more cattle there were kept the more manure would be produced for the increased

fertilization of the land. He thought it would be very much to be regretted if foreign cattle were to be allowed to mix again with our own, half ruining the farmers of the country. He suggested that an advantageous outlet for the locked-up

capital of the country would be afforded by advances of money to farmers in whom they had confidence, to enable them to farm better, and add to the productive capabilities of the country.

THE CORN AVERAGES.

[We publish the following correspondence at the request of Mr. Sewell Read.]

Honingham Thorpe, 17th Jan., 1888.

SIR,—I ventured, in the House of Commons last year, to draw attention to the gradual increase of the *corn average* above the price the farmer receives for his grain in the market: Mr. Hunt has requested me to bring these points under your notice.

The first is an evil which has always existed, and one that perhaps cannot be rectified by the Board of Trade. It is this, that only the *best* of the corn the farmer grows finds its way into the averages, as all the inferior grain is consumed by him on the farm, or sold to a neighbouring grazier. The evil, however, is on the increase, as, the more highly land is farmed, the more likely the corn is to lodge and produce a large quantity of thin grain; while the operations of the Malt-tax, in wet or very abundant seasons, make the inferior barleys unsaleable except for feeding purposes, and consequently the farmer gives it to his stock. The remedy, you will say, is in the growers' hands—he should sell *all* his corn, and so all would be returned in the average. But this would clearly not answer his purpose. But would there be any great objection to allowing every farmer to make a return once in the year, or once a month, of all the grain he consumes on his farm, and the market value of the same?

The next point I would refer to is one of more recent origin, and, with the extension of railroads, is becoming more common. I allude to the practice of returning the *same lot of corn several times over*. For instance, a small dealer at a little market buys several lots of corn; he takes these samples to the county-town, and sells them there to a large merchant; this merchant attends some distant market and sells them a third time to some great maltster or miller. These lots of corn appear in the corn returns three times, in the second and third return with the *profits of the two merchants and the carriage of the grain* added to the actual amount paid to the farmer. I would suggest that the corn should not be returned unless it was bought direct from the grower, and consigned by the farmer to a commission-agent to sell for him.

The last point I would notice is the growing custom of selling grain by weight. The weight insisted upon for wheat is generally 68lbs. per bushel, while the natural weight of the average of years is about 61½lbs. Consequently the quarter of corn which is returned is in reality eight bushels and 12lbs. of wheat, which we may call *three-quarters of a peck*.

As it is probable a comprehensive measure for the adjustment of all our weights and measures will soon engage the attention of Parliament, this little matter will probably be then set right.

You are well aware that this *artificial* value of the corn returns is no sentimental grievance, but seriously affects the owners and occupiers of land, the value of all tithes and corn-rents being determined by these averages.—I am, sir, your obliged and faithful servant,

CLARE SEWELL READ.

Right Hon. S. Cave, M.P., &c., &c.

11th Feb., 1888.

SIR,—I am directed by Mr. Cave to forward to you the accompanying Memorandum on Corn Averages, which has been prepared as a reply to the observations contained in your letter of the 17th ultimo. Mr. Cave is sorry that he has not been able sooner to answer your letter, but the delay has been owing to the great pressure of business in the Statistical Department.

I have the honour to be, sir,
Your obedient servant,
W. W. EMERSON TENNENT.

C. Sewell Read, Esq., M.P.

MEMORANDUM.

Mr. Sewell Read calls attention in the first place to the

"gradual increase of the corn averages above the price the farmer receives for his grain in the market"; but it is not stated how this is proved to be the case. As far as an opinion upon the question can be formed by the Corn Department, there does not appear to be any evidence that the corn averages do not now, as formerly, represent the average value actually realised for corn in the markets from which returns are obtained. If the corn averages had gradually increased and had remained higher than the actual market prices, the value of the tithe rent-charge, as determined by the averages, would also have shown a gradual increase. This, however, is not the case; but, on the contrary, the value of the tithe rent-charge has fallen in recent years. It amounted to £112 3s. 4d. in 1861, and to £97 7s. 9½d. in 1886, having decreased in each year of that period. A comparison of the prices of imported foreign corn as computed at the Custom House, with the corresponding averages for British corn, also affords grounds for believing that the market value of the latter is not overstated.

As regards the *quality* of the corn usually sold by the farmers, and the consequent effect upon the averages, Mr. Read is of opinion "that only the *best* of the corn the farmers grow finds its way into the averages, as all the inferior grain is consumed by him on the farm, or sold to a neighbouring grazier." But judging by the different prices at which wheat, barley, and oats are respectively reported to have been sold, there is reason to believe that the quality of the corn sold must vary considerably. The following table shows the difference in the prices of wheat and barley as sold in the Norwich market in the four weeks of December last:

		First week.	Second week.	Third week.	Fourth week.
Wheat per qr.	Highest	76	73	79	80
	Lowest	59	60	60	60
	Difference	17	13	19	20
Barley per qr.	Highest	44	44	44	44
	Lowest	32	30	36	34
	Difference	12	14	8	10

Within these limits sales took place at from 10 to 20 different prices. With the difference in price as then shown, and the probability that similar results would be shown by the sale of corn in other markets, it may be assumed that the returns from which the official averages are computed do in the aggregate include the market prices of all qualities of corn which can fairly be said to have a marketable value.

The seasons no doubt affect the quality and the consequent value of corn very materially; but although corn, like all other commodities, must be subject to variations in value, it is difficult to see how corn, when depreciated in value, can be generally disposed of without influencing the prices which determine the averages.

If in some seasons more corn be consumed at home by the farmers, it is nevertheless most probable that corn of the same quality also finds its way into the markets, and that the price of it is included in the official returns.

It would appear to be very doubtful, even if it were practicable to obtain from every farmer, as suggested by Mr. Read, "a return of all the grain he consumes on his farm, and the market value of the same," whether the average market price of corn produced in England and Wales could be more satisfactorily obtained for the purpose of the tithe than by the present system.

The trouble, difficulty, and expense of obtaining from every farmer a return of the corn consumed on his farm, and the correct market value of it, would be very great. The valuation of corn by the grower would certainly lead to troublesome and vexatious disputes.

Mr. Read is apprehensive that the averages are unduly affected by the "same lot of corn being returned several times over" owing to the facility of transport afforded by railroads; and he says if a lot of corn be returned three times the profits of two merchants and the carriage of the grain will be added to the actual amount paid to the farmer. The case as suggested by Mr. Read is possible; but if it did happen, it is clear that only the *market* price would be paid in each repeated sale, and that the merchants could obtain no more money for the corn than could farmers in the same place, at the same time and for the same quality of corn.

The price of corn varies in different markets; but the local differences of price are less than they used to be, and the greater equalisation of prices is certainly attributable to the operation of railroads.

Corn is, however, largely sold by "sample," and the same lot is not often moved for sale from place to place in the bulk.

Mr. Read suggests that "no corn shall be returned unless it was bought direct from the grower, or consigned by the farmer to a commission agent to sell him." As all dealers in corn in the towns from which returns are obtained are by law required to make a return of all corn bought by them, and as it is certainly their interest to buy upon the cheapest terms, it is probable that in practice corn is now generally bought direct from the growers.

A Legislative enactment, providing that only such purchases should be returned, would not be likely to produce any material change in the official averages.

The last point noted by Mr. Read is a growing custom of selling grain by *weight*, and he states that as the weight per bushel insisted upon for wheat is 63lbs., instead of an average of about 61½lbs., the quarter of wheat which is returned is in reality 8 bushels, and 12lbs. in addition. The practice of selling grain by weight prevails in some towns; but whether it is a growing practice or not it is difficult to say. It may be more convenient, or it may be fairer, as between seller and buyer, to use weight instead of measure in the purchase of corn; but corn is rarely bought by measure irrespective of the consideration of weight. It is, in fact, the assumed weight of a certain measure of corn that chiefly determines the price of such a measure of corn. The selling of corn purely by weight, as per 100lbs. at Liverpool, or by any other fixed weight, and the selling of corn to weigh a certain number of pounds per bushel, or any other measure, are of course two different customs. In the latter, although 63lbs. be fixed as the weight per bushel which wheat of good quality is expected or required to weigh, some wheat must be sold of a less weight and some of a greater weight per bushel; and it does not follow because there is a kind of a standard weight for a standard quality that in all sales, if wheat be not of that weight per bushel, more corn must be given to make it up to that weight. If sales were only made by measure of a fixed weight, a balance would have to be settled either in corn or money, according as the weight of the corn sold was below or above the standard weight.

The addition of 12lbs. of wheat to the quarter, as mentioned by Mr. Read, could probably only happen when, in the case of a bargain for wheat at 63lbs. per bushel, the corn upon weighing was found not to be equal to that weight.

The question of the weight of wheat per bushel must resolve itself upon the market into a question of price.

Wheat weighing 63lbs. per bushel will fetch a certain price, and wheat weighing only 61½lbs. per bushel will fetch a lower price.

There does not therefore appear to be reason to apprehend that the prices of the quarter of wheat, as returned for the averages, are in reality the prices for a larger quantity of wheat than the ordinary quarter of eight bushels.

The official corn averages are, as Mr. Read observes, of serious importance to the owners and occupiers of land, as they constitute the basis for determining the value of all tithes, and in some parts of England and Wales the rent of land also.

The tithes have now been determined upon the corn averages for 32 years, a period long enough probably to afford sufficient evidence of the operation of such a system.

The standard price of a bushel of wheat, barley, and oats, respectively, for determining the value of the tithe rentcharge of £100 was fixed upon the average prices of the seven years ended Christmas, 1835. From that time to the present the tithe rentcharge has been below or above the £100, according

to the septennial average price of wheat, barley, and oats at Christmas in each year.

It would appear by a comparison of the value of the tithe rentcharge in each year from 1836 to 1868, that a fairer system of determining the tithe could scarcely be established.

The value of a tithe rentcharge of £100 has been below that amount in 16 years and above it in 16 years, and the annual variation from the £100 upon an average of 32 years has only been an excess of 16s. 1½d., or about 0·8 per cent.

Statistical and Corn Department, Feb., 1868.

Honingham Thorpe, 21st Feb., 1868.

SIR,—I duly received your Memorandum on corn averages, and beg to thank you for the long reply you have given to my previous letter.

I would respectfully submit to you, that a farmer who mixes with those who buy and sell corn all over the kingdom is quite as likely to know whether the corn averages "are above the price the farmer receives for his grain in the market" as any of the officials of the Corn Department, who, I believe, are not in the habit of growing or selling corn. I am quite ready to prove my statement by reference to my books, and those who have farmed the land before me, and I will, if you please, bring one farmer out of every county in England and Wales to support what I have advanced. For instance, I find that thirty years ago the prices that were realized for wheat grown on the land I occupy were rather above the average of the kingdom; but for the past ten years they have been considerably below. I have overlooked many old farmers' books, and find the same result, and I believe, as I have previously stated, that they can be mainly accounted for by the fact that land is *now* more highly cultivated. You cannot stimulate corn crops without running the risk of deteriorating the *quality*. You certainly grow more off-corn, and as you increase the number of your stock you consume a greater quantity of that inferior grain on the farm. Very many farmers use much more corn for stock-feeding than I do, but the average annual consumption of grain on this farm of 420 acres is 200 qrs., which (with the exception of the oats given to the riding-horses) is worth from 8s. to 16s. per qr. less than the corn I sell in market. In a year like this, when corn is dear and well harvested, we consume less corn and more oilcake; but when corn is damp and unsaleable we use a much larger quantity for stock-feeding. Some of this inferior grain no doubt finds its way to market, and is included in the official returns, but I know that by far the greater portion is used on the farm.

I can see nothing remarkable in the returns for Norwich market in December last. Very generally there is a difference of 10s. per qr. between the *best red* and the *primest white* wheats; and these returns would have been much more complete had they given the total number of quarters sold, *how many* made the *lowest price*, and the average value of each week. I myself in December sold a little wheat at 60s., and the exact figures were 45 qrs. at 70s. and 3 qrs. at 60s. Now these three quarters in ordinary years I should have ground for the grazing cattle; but still there are five kept for home consumption that would hardly fetch 45s.

I am sorry to trouble you with these twaddling details, but, as my statements are questioned, I must prove my case. The Memorandum is kind enough to admit that the case of the same lot of corn being sold and returned twice or three times "is *possible*." It is certainly *possible*, for it is of weekly occurrence. Doubtless the corn is largely sold by sample, and "not moved for sale from place to place in *bulk*;" but it is nevertheless constantly sold to the second, and sometimes to the third buyer, and yet many go straight from the farmer to the last buyer. "But," says the Memorandum, "all the buyers are by law required to make a return of all the corn bought by them."

As to the statement that "corn is now generally bought direct from the growers, I have information that leads me to the conclusion that, in the great consuming markets, at least *one-third* of the corn which finds its way into the averages is sold by merchants—not by farmers.

In Norfolk we are great corn-producers and comparatively small consumers. If our county grows upwards of 2,000,000 quarters of grain (how much of that I wonder finds its way into the returns?) it is evident that a vast amount of corn is bought

by merchants who re-sell the wheat in the North and the barley in other markets all over the kingdom.

I have no hesitation in stating that the custom of buying corn by weight is *increasing*.

When corn is sold by weight irrespective of measure, it all depends upon the *scale* by which that weight is converted into measure whether the average price per qr. is fairly recorded.

On this part the Corn Department is cautiously silent; perhaps you will tell me the official weight of a bushel of wheat or barley at Liverpool? But my statement was that the weight generally demanded for wheat was 63lbs. per bushel, while the natural weight of the wheat seldom averaged more than 61½lbs.

I am deeply grateful for the information that "wheat weighing 63lbs. a bushel will fetch a certain price, and wheat weighing only 61½lbs. will fetch a lower price," but when the lighter wheat is *made to weigh* as much per qr. as the heavier, *both* go down in the *averages at the same price*. I can well remember, in South Wales, selling wheat weighing 58lbs. at 63lbs. per bush., and barley at 5½lbs. that did not weigh 50; and finding out that a *four-bushel* sack would not hold *half-a-quarter* of corn! And I could bring further proof that the price of a quarter of wheat, as returned for the averages, is,

in reality, the price for a *larger quantity* of wheat than the ordinary quarter of eight bushels."

I quite agree that the value of the tithe-rent charge has been fully maintained in the average of the past 32 years. The Memorandum argues that this is strong evidence of the *correctness* of the corn returns. I, on the contrary, contend that the tithe rent-charge, having maintained its value, is a certain proof that the corn averages are fictitiously high. I am positive that the actual value of *all* the corn grown in England and Wales since '36 is fully *ten per cent. below* the average price as fixed by the corn returns.

As this question deeply interests the owners and occupiers of land, I shall send this correspondence to the agricultural journals. By making this Memorandum public, my brother-farmers will have an opportunity of judging of the truth of my statements, all of which have been contradicted, with more force than courtesy, by the authorities of the Corn Department.

I am, sir, your faithful servant,

CLARE SEWELL READ.

The Right Hon. S. Cave, M.P., &c., &c., &c., Board of Trade, London.

LEGAL DECISIONS AFFECTING FARMERS.

LIME EXEMPT FROM TOLL.

At the Crewkerne Petty Sessions, on Wednesday, Mr. Edward West, collector of tolls of the Merriott gate, was summoned by Mr. Samuel Lawrence, of Merriott, for illegally demanding toll. Mr. Jolliffe for complainant. Defendant compelled complainant to pay toll for a horse and cart laden with lime which complainant was about to use as manure for improvement of his lands. Under the Act for creating the Crewkerne Turnpike Trusts, "lime for improving the land" was declared to be exempt from toll. This Act was repealed by a new Act in 1825. By the General Turnpike Act, 3rd George IV., c. 124, lime was made liable to toll. By the 3rd and 4th Victoria, c. 51, it was enacted "that nothing in the General Act shall extend to enable any collector of tolls under the authority of any local Act to take or to demand toll for horses or carriages employed in conveying lime on any turnpike road for the improvement of land, when they are exempt from the payment of toll by any local Act then in force, or which were exempt from the payment of toll by any local Act in force at the time of the passing of the 3rd Geo. IV., since repealed." The Crewkerne Act of 1805 having been put in force at the time of the passing of the 3rd Geo. IV., and although repealed by the Act of 1825, the Bench decided that lime was exempt from toll under the 3rd and 4th Victoria, chapter 51.

ACTION FOR DAMAGES FROM GAME.

Court of Session—First Division.—Feb. 18.

MILNE v. THE EARL OF DALHOUSIE.

This was an action of damages raised by Alexander A. Milne, tenant of the farm of Balmachie, on the estate of Panmure, against the Earl of Dalhousie, the landlord of the pursuer. The action which was originally raised in the Sheriff Court of Forfar, and was advocated with a view to a jury trial, concluded for £250, as damage sustained by the pursuer, in consequence of the defender having, during the year 1866, wrongfully preserved, and having had in excessive quantities upon the farm, game of various kinds, whereby the grass and grain crops were injured. The lease under which the pursuer holds his lands was entered into in 1774, and reserves to the proprietor all right of killing game. The pursuer alleged that up to 1852, when the defender succeeded to the estate of Panmure, there was little game on the farm, and that there was no watcher kept; and that the farmers were allowed to destroy the hares. That on the defender succeeding in 1852, he put on ten or twelve gamekeepers over the district in which the pursuer's farm is situated; that he imported and bred pheasants and rabbits to a large extent, and turned them loose on the pursuer's lands, and that he abstained from shooting during the first two or three years after 1852. The defender alleged

that the pursuer had not observed the mode of cropping enjoined in the lease, and that if he had done so the damage could not have been sustained. The defender's counsel contended that there was no relevant case averred on record, so far as there was no increase of the game since the date of the lease, or that the present amount was not more than its average stock. That the action was excluded by the pursuer having deviated from the order of cropping, and that the defender should be allowed a counter-issue as to the micropopulation. The pursuer, on the suggestion of the Court, agreed to take an issue in the terms settled in the case of Syme v. Earl of Moray's Executors, 1st February, 1868:

It being admitted that in 1866 the pursuer was the defender's tenant in the farm of Balmachie, under the lease, dated 16th of February, 1774, No. 15 of process, and assignments thereof, Nos. 16, 17, and 18 of process, and had right to the crops grown on the said farm in the said year:

Whether, in 1866, the defender had upon the said farm an unreasonable and excessive stock of game of various kinds, beyond what existed thereon at the date of the lease, to the loss, injury, and damage of the pursuer?—Damages, £250.

SCHEDULE REFERRED TO IN ISSUE.

Fields.	Contents in Scots Acres.	Crop in 1866.
1. Quarry Park	12 or thereby	Wheat.
2. Muckle Mains	23 "	Oats.
3. West Brodie	9 "	Barley.
4. East Brodie	9 "	Oats.
5. Knowes	17 "	Wheat.
6. Whigs' Braes	9 "	Wheat.
7. Kilnshade	19 "	Wheat.
8. Broadshade	9 "	Barley.
9. Ballfield	13 "	Barley.
10. Two north-west-most fields } each	8 "	Wheat.

The Court approved of the issue, and held that a counter-issue was not required in order to prove micropopulation.

DAMAGES BY GAME.—In the Jury Court, Edinburgh. Mr. George Syme, tenant-farmer Fifehire, has obtained £197 damages from the trustees and executors of the late Earl of Moray, on the ground of injury to crops from excessive preservation of game. The damages were laid by the pursuer at £270.

PRESENTATION TO MR. WILLIAM TORR, OF AYLESBY.—The friends of this well-known agriculturist have just presented him with his portrait by Knight, the Royal Academician. Mr. Hutton presided at the dinner at Caistor, where about sixty of the subscribers met Mr. Torr.

MILLS AND MILLING.

ON THE EFFICIENCY AND ECONOMY OF EXHAUST APPARATUS.

The effect produced by exhaust apparatus is the reverse of that produced by blast apparatus, so that the working of the two together involves a contradiction of practical data in the mill, which calls for a detailed explanation. Thus a blast-fan compresses the air forced in between the millstones, while the exhaust-fan rarefies the air in the millstone-case and also between the grinding surfaces so far as its action extends inwards, thereby leaving the air less dense than the atmosphere. It has likewise been shown, that the thermometrical action of the air in the two cases is also of an opposite character, the compressed air of the former giving out its heat to the flour and stones, the rarefied air of the latter removing the heat from the flour and stones.

There is manifestly something in these peculiar antagonistic effects produced by blast and exhaust fans that demands more than a passing notice. True, under the efficiency and economy of blast-fans in the preceding paper it was shown that the air was very little if any compressed; but this arises from the defective character of the pneumatic apparatus used, and not from anything erroneous in the theory, the scientific proposition of compressed air being sound both in principle and practice, as will be shown more at length in our next paper. It is this defective state of the blast apparatus now in use which has led to its being given up as a comparative failure. But it was shown at the same time that the exhaust, however imperfect in its present construction, is nevertheless an established and generally acknowledged improvement in milling, which few millers would like to give up; and the closer the facts of the case or the scientific data at issue are examined, it will be found that the best working exhaust apparatus now in use is that which produces the greatest degree of rarefaction within the millstone-case. Moreover, another rather anomalous circumstance requires to be premised in this place, viz., it is not the best or most efficient and economical patented exhaust apparatus which has been reduced to practice in this country, but one which without improvement is about the worst in the patent office, i. e., the *plenum* exhaust project of 1849; for without having pirated, from a prior patent No. 11,084 of 1846, the shutting of the eye of the upper stone and the exhaust-valve of the meal-spout, this plenum bubble had fallen to the ground a complete failure. But of this more after, in another paper.

There are three different varieties of exhaust apparatus which it will be necessary to notice, in order to lay the details of the general proposition practically and scientifically before our readers, viz.:—

1. Exhaust apparatus which requires a regulated supply of air into the millstone-case, besides that which issues through from between the grinding surfaces along with the flour, in order to give the exhaust current of air sufficient force to convey and elevate the meal (or stive-heated air and vapour when the meal is conveyed and elevated by creepers and elevators in the usual way) to the hopper-bay or meal-room in the upper part, or some other part of the mill.

2. Exhaust apparatus which removes the hot-breath and stive from the millstone-case along with the meal as fast as they issue from between the stones, through the meal-spout and along air-tight conveying and elevating tubes to the hopper-bay or meal-room, the external atmosphere being excluded from the millstone-case, save in at the eye of the upper stone, the air within the millstone-case and conveying tubes being so rarefied as to be incapable of elevating any of the meal, &c.

3. Exhaust apparatus which removes the hot breath and stive from the millstone-case to a separate stive-room, the hot air being in a rarefied state as in the second kind, also with the external air similarly excluded, the meal being carried by the meal-spout either continuously or intermittently through an exhaust valve from the millstone-case, and conveyed to the meal-room in the usual way, by conveying and elevating ap-

paratus, or to the cooling-room or hopper-bay where such is used.

The American "flour pump" (of 1813), for conveying and elevating flour, is an example of the first kind. In this case two flour pumps are placed one on each side of the shute of the meal tube elevator in the hopper-bay department, and these by being worked alternately produce a current of air up the meal-spout from the millstones, of sufficient force to carry up the meal and stive along with it. To effect this a regulated quantity of atmospheric air is drawn over the top of the upper stone to supply the exhaust apparatus or flour-pumps with the necessary volume of air to give force to the upward current. Thus the flour-pumps at the top produce a vacuum under the pistons at each stroke, and the air at the bottom as the pistons rise slowly flows in over the millstones with a force equal to fifteen pounds per square inch, a force amply sufficient to carry up the flour into the receiver of hopper-bay shute, from whence it drops the moment the pistons begin to descend so as to allow the lower exhaust-valve to open and the upper one to shut. Each piston has a receiver and two exhaust-valves, so that the flour falls alternately down the discharge shute or before the hopper-bay, first from the one pump and then from the other, just as water flows from a double-piston water-pump; but between the millstone-case and the two induction valves of the two receivers the upward flow of the meal is continuous and at any required velocity, according as the exhaust apparatus is regulated.

The single-cylinder fan of a prior American patent (1810), placed at the top of Oliver Evans' elevator shute, described in a previous paper, would produce a similar effect; but as this patentee confines his claims to the elevating of corn, we have not met in any American work with an account of its being applied to the elevating of flour from the millstones; but it has been applied in France, and from France it was introduced into Huntingdonshire, when we were residing in that county some twenty years ago, as noticed in "Morton's Cyclopædia of Agriculture" formerly quoted. In the latter of these examples (Haughton, Hunts), the regulated influx of air, however, was by peg-holes, and only for conveying the stive up the elevating spout to a stive-room, so that it belongs to the third kind of exhaust apparatus.

Several of the American propositions, both patented and unpatented, about 1831 and onwards, already noticed, form examples of the second kind of exhaust. They consist of two flour pumps, or a single centrifugal pump being placed at the top of Oliver Evans' elevator in the hopper-bay department, the eye of the runner in this case being closed. A modification of this method of exhaust, and also of the American hopper-bay, was invented in France, or introduced into this country from France, in 1846, and patented as a communication under the old statute, specification No. 11,084 of that year. In the drawing, only one flour pump is shown, and it is placed contiguous to the millstone-case; but two pumps are specified, and the application of these, as in the American examples above, is evidently within both the meaning of the patentees and the compass of the practical working of the patent air-tight conveyors and elevators being then in use, and hence public property in America, France, and England.

As examples of the third kind, the French and Dutch exhausts, introduced into this country between 1846 and 1848—the former into Huntingdonshire, as above stated, and the latter into Glasgow—may be quoted. But before this time (1846) the proposition of a detached exhaust-fan began to engross the attention of many English inventors, but without any just conception of the true philosophy of its use, relative to the *modus operandi* by which it rapidly converts the heat given off in the grinding into a latent form, thereby keeping the flouring portion of the stones cool, preventing, at the same time, the conversion of the natural moisture of the flour into vapour, the condensation of this vapour, pasting, and so forth. In short, the true and real value of an exhaust was greatly under-estimated about this time, the absurd notion of drawing or sucking currents of air through between the millstones

being commonly entertained. In the above patent of No. 11,084, for example, this idea is expressly specified; and we may further observe that between 1831 and 1846 the same erroneous notion is claimed in several American and French patents; and it is only within the last few years that the soundness of this old fallacious fireside theory has been publicly called in question in this country. The erroneous idea of a *plenum exhaust* may be quoted as another peculiar example which was patented under No. 12,636, 1849, and in the specification of which the patentee alludes to the above patent, No. 11,084, when he specifies, "My invention relates only to sucking away the plenum of dusty air forced through the stones, and not to employing a sufficient exhausting power to induce a current of air between the millstones without a blast, this having before been practised." And this he does apparently for the express purpose of obviating the infringement of that patent (No. 11,084), or of disclaiming what it claims. We shall return to the absurdity of this patent (No. 12,636), as claimed in a subsequent article, when investigating the effects produced upon the grinding surfaces and in the millstone-case, by blast and exhaust-fans now in use. At present we extract the above quotation purposely to show that this patentee entertained the common erroneous ideas relative to cooling currents of air between the stones, and the total absence in his specification of the real effects produced by his own exhaust, as worked under his patent. Between 1850 and 1866, inclusive, there is hardly a year passes over without one or two new exhaust propositions being patented, nearly the whole number belonging to the third kind of exhausts now under notice, most of them having stive rooms or some equivalent; but into the details of the efficiency and economy of stive-rooms and their equivalents we do not intend to go at present. In point of fact, the opinion is fast gaining practical support that the separation of the stive from the general body of the meal is shunting the steam coach off the main line of progress. In other words, of the above three kinds of exhaust, the second, or, more correctly speaking, the principle of the second, appears to be the freest from objection. At present, doubtless, no end of objections may be, and in point of fact are, raised to each of them; but as the true nature of exhaust becomes better understood, the bulk, if not the whole, of such objections will eventually be obviated. Thus the common cylinder and screw fans are adapted for the first kind of exhaust, but not for the second and third, for their efficiency and economy in keeping up an exhaust of the kind required in them are subject to the same objection as in keeping up the requisite pressure of blast pointed out in a previous paper.

The soundness of this conclusion relative to the non-efficiency and economy of centrifugal fans for keeping up the peculiar state of exhaust in question will appear more manifest by reference to the facts of the case at issue in each example. Thus in examples of the first kind of exhaust, such as the American flour pump or elevating fan, the work to be done is simply to produce and keep up through a tube a continuous current of air of sufficient force to convey away or elevate the flour, stive, and hot breath from the millstone-case; and for this purpose the cylinder and screw fans are well adapted, as stated above, from the continuous mode of their centrifugal and fanning actions, or, according to the modern *dictum*, from the continuous mode of their blast and exhaust actions, the force of the blast-action in front being not much greater than the exhaust-action behind. The force of the effluent current of air discharged from the vanes of the cylinder-fan or the blades of the screw-fan into the stive-room or atmosphere is, for instance, greater than the force of the influent current of air drawn up the conveying and elevating meal-tube from the millstone-case, otherwise the air from the external atmosphere would not flow in over the top of the upper stone, or in at the regulating air-supply openings or peg-holes, &c., as the case may be; but owing to the slight fanning-action of the runner, more especially when furnished with vanes, scrapers, or brushes upon the periphery, the difference between the two forces is less than is indicated by the force of the former (the effluent current), as compared with the ordinary pressure of the atmosphere—i.e., the pressure of the effluent current per square inch over the ordinary pressure of the atmosphere. No doubt the actual difference of force or pressure in each case will depend upon how the influent current at the millstone-case for carrying up the meal is regulated; but questions of

this kind are too obvious to require more than a passing notice of their general details.

Of parallel cases to examples of this kind of exhaust, one or two may be quoted for illustration, such as the common winnowing-machine or blower, in which the influent exhaust current is regulated by slide-valves or shutters, so as to supply the requisite quantity of air for the effluent blast current to winnow the corn, blow the smithy fire, and so forth.

On the other hand, for examples of the second kind of exhaust-apparatus, the common cylinder and screw fans above named are not well adapted, the sacrifice of motive power to keep up an effective velocity being enormous, as will subsequently be shown. This arises from the peculiar action required in keeping up this exhaust to a considerable, if not the lowest, degree of rarefaction practicable in the millstone-case, it being totally different from that of examples of the first kind of exhaust, the quantities of air discharged in the two cases being so widely different as hardly to bear comparison the one with the other, the two blast and exhaust forces being equally different. Thus, in the second kind, all the air exhausted passes through between the millstones; and the quantity is so small, even when the stones are grinding lively, that the current, in passing through any of the exhaust-tubes now in use, would not be perceptible, according to the experimental and scientific data quoted in a previous paper relative to the velocity of the wind, when it can be felt, the actual quantity of air which passes through between the stones being only from one to three or four bushels per hour, or under ten thousand cubic inches per hour; whereas, in examples of the first kind, from ten thousand to twenty thousand cubic feet of air will be discharged per minute.

In examples of the third kind rotary fans are also not well adapted, although the actual quantity of air discharged is not so easily determined as in examples of the second kind, owing to the meal being discharged at one spout, along with so much air, and the stive at another, along with another portion of air, both these quantities of air being exhausted from the millstone-case, the former by the falling meal, and the latter by the fan; and besides this, there is always an influx of less or more air up the meal-spout, even in those examples where an "exhaust valve" (or "balance valve," as it is sometimes technically termed) is used in the meal-spout, "break-falls," and other devices for obviating the separation of stive from the meal, and for preventing an influent upward current of air, at the opposite side of the spout, from the meal. Mills have been examined, and "scientific reports" lodged as evidence in court, in infringement law-suits, by several civil engineers; but when we mention that the quantities of air exhausted in these examples vary from six to nine hundred cubic feet of air per hour, the reader will readily perceive that no reliable value can be placed upon such results. In other words, such quantities cannot be admitted as established scientific data. Nevertheless, the quantity of air discharged is manifestly small, as compared with the effects produced by exhaust-apparatus of the first class.

It follows, therefore, that either the degree of exhaustion in the millstone-case under this, the third kind of exhaust, is very small, or else that the reactionary pressure upon the blast or discharging surfaces of the vanes of the fan is very great. But the great velocity at which fans are driven is incompatible with the former alternative, so that the latter becomes the rule of action; consequently, there must be an influx of air with the vanes into the drum of the fan, or "back-draught," as it is sometimes technically termed; so that the discharge from the vanes will be greater than that from the millstone-case. Hence the difficulty of obtaining a correct measurement of the actual quantity of exhausted air from the millstone-case; and hence, also, the extra expenditure of motive power to produce a given effect or degree of exhaustion.

THE USE OF COMPRESSED AIR BETWEEN THE GRINDING SURFACES OF MILLSTONES.

The space between the millstones and within the millstone-case, meal and stive spouts may be assumed a given measurement; so that whatever may be the quantity of air and wheat forced in between the stones, they (the air and the wheat) must occupy a given space in each of those divisions, i.e. (1), in the space between the grinding surfaces; (2) in the space within the millstone-case; and (3) in the space within the meal and stive spouts.

If we now assume, for the sake of illustration, that the quantity of wheat ground per hour is seven bushels, which would be about nine cubic feet; that the quantity of air which passes through between the grinding surfaces is either of the two extremes mentioned in the preceding paper, viz., six cubic feet of air per hour, or nine hundred cubic feet of air per hour; that this air passes into the stove-room through a spout six inches square, which would give it a velocity of twenty-four feet per hour for the former, and of 3,600 feet per hour for the latter; and that in each case two cubic feet of air passes down the meal-spout along with the meal; this would give eight cubic feet for the total quantity of air that passes through between the stones in the former extreme, and 902 cubic feet of air in the latter extreme. If we again assume the diameter of the runner to be four feet, making 120 revolutions per minute, or $120 \times 60 = 7,200$ revolutions per hour; then the velocity of the periphery would be nearly seventeen miles per hour.

The actual quantity of wheat and air between the millstones at any given instant of time is not so easily determined with reliable accuracy. True, many experiments have been made by millers to ascertain the quantity of wheat required to fill the stones; but these quantities are so different that they would rather tend to perplex and confuse the mind than furnish instructive data from which to deduce trustworthy conclusions—the form of the face of the grinding surfaces, dress, quality of the wheat, fineness of the flour, and so forth, each and all giving rise to less or more difference of the internal capacity of the grinding surfaces, the runners being of equal diameter, and making each a given number of revolutions per minute.

Certain general principles, however, may be deduced. Thus, as formerly stated, seven bushels of wheat, containing one bushel of air between its interstices, moving at a velocity of 3,218 inches per hour, will pass through a three-inch diameter pipe in that time. It was also formerly stated that this quantity of air passes through between the stones along with the flour when grinding freely, but not lively, and rather more than one bushel of air to seven bushels of wheat when the stones are grinding lively; but in this latter case the air is compressed air. Let us therefore assume, for the sake of easy calculation by cubic measurement, two cubic feet of air at the ordinary pressure or density of the atmosphere is used up per hour in grinding ten cubic feet of wheat, when grinding without either blast or exhaust-fan; then, whatever additional quantity of air is forced through between the grinding surfaces of a pair of millstones, by means of a blast-fan, has to pass, in a compressed form, within the space or capacity of two cubic feet, as under the ordinary pressure of the atmosphere. In other words, the proportion may be thus enunciated in the scientific language of the class-room:—

The ratio of space occupied by the wheat and air in grinding remains uniformly the same whatever may be the density of the latter and the speed of grinding—i.e., ten cubic feet of wheat and two cubic feet of air in the interstices between the grains of that quantity of wheat will pass through between the millstones in grinding that wheat into flour. If ten cubic feet of wheat be ground per hour, then two cubic feet of air will pass through between the stones per hour. If the speed of grinding is increased by compressed air to 15 cubic feet of wheat per hour, then three cubic feet of air will be used in grinding it into flour. If 20 cubic feet of wheat, then four cubic feet of air; and so on in the ratio of five cubic feet of wheat to one cubic foot of air; or, as formerly expressed, seven bushels of wheat to one bushel of air; or in the ratio of seven to one when the air is in its normal state.

Let us now apply the above rule to ascertain the density, or the degree of compression, of the air between the grinding surfaces of millstones when it is forced in by blast-fans, according to the reports of engineers above referred to. Thus, in one report, six cubic feet of air per hour is said to be thrown into the stove-room, and in another 900 cubic feet. In neither case is it reported how much air passes along with the flour down the meal-spout; but if we assume two cubic feet in each case, then the total quantities of air measured at the ordinary density of the atmosphere that passes through between the stones would be in the former case eight cubic feet of air, and in the latter 902 cubic feet of air. If, therefore, the speed of grinding is at the rate of ten cubic feet of wheat per hour, and the ratio of capacity five to one, then the eight cubic feet in the former case would be compressed into the space of two

cubic feet—i.e., a pressure of four atmospheres; and as the latter, the 902 cubic feet of air, would also be compressed into two cubic feet, it would give a pressure of 451 atmospheres between the millstones. If the ratio of space occupied by the wheat and air is seven to one, which is the rule, according to the determination of Dr. Hales, and that which we have all along assumed as the ratio when the stones are grinding freely but not lively, then the degree of compression in the two cases would be proportionally greater.

"When air has been condensed to about one-fortieth (1-40th) of its bulk, it exerts a force which is still very inferior to that of gunpowder." So we read under the article "Air-gun" in the last edition of "Ure's Dict. of Arts, &c.;" and the quotation may be taken as an introductory prelude to the question—What effect will the above examples of condensed air have upon millstones in grinding? In the first example the air is reported to be condensed into one-fourth (1-4th) of its natural bulk, and in the second into one-four-hundred-and-fifty-one (1-451) times its natural bulk; the former being equivalent to a force of 80lbs. to the square inch, and the latter of 6,765lbs. to the square inch. It is not very easy to entertain seriously the practical solution of either of these two questions, even when put in the most favourable light—as we have done; for some have said 6 and 900 cubic feet per minute. Were steam raised to such a pressure as the latter, few boilers would stand it long; but, fortunately for the miller who uses blast-fans in his mill, there is a safety-valve in the feed-pipe, as formerly stated. In a former paper, when alluding to the common notion of the quantity of air forced through between millstones by blast-fans, &c., in general terms, it was stated by way of practical illustration, that the strong blast entertained by some patentees would blow the corn up the feed-spout and out of the hopper into the miller's face; and, very probably, some of our milling readers may, in the absence of the above details, have hastily arrived at the conclusion that the comparison was purposely meant as an exaggeration. They will now see that the contrary is the case. We were then discussing patented improvements in the language of patentees, and those who adopted such improvements; and from the above data of four atmospheres in the one case, and 451 atmospheres in the other, each being condensed into the bulk of one atmosphere in order to pass it through between the millstones along with a given bulk or measure of wheat, it will now be seen that we had ample grounds for the sweeping conclusions then drawn; for a force of 80lbs. to the square inch, were it actually applied, would blow the wheat as above stated, a much less force being amply sufficient to elevate corn in tubas. As to the latter, $451 \times 15 = 6,765$ lbs. to the square inch, if it did not blow the upper millstone to the clouds, it would certainly have the effect of clearing every millstone-case in the mill of its *plenum of stove*. In short, it almost baffles the most lively imagination to conceive how millers should ever have allowed such absurd dogmatical teachings to be crammed down their throats by civil engineers, for the improperly-performed experiments from which such dogmas are deduced only make the miller ten-fold worse, as will subsequently be shown.

The actual degree of compression produced by blast-fans is very different in the different examples where air has been forced in between the millstones, but nothing has been done to determine satisfactorily this difference, or even to substitute a general approximate rule upon which any practical reliance can be placed, but in no case which we have seen has it exceeded half an atmosphere, i.e., the total pressure of air between the stones fell under one-and-a-half atmospheres. Speaking from memory, we in a former paper estimated the force of a blast at about one-fourth of an atmosphere in addition, i.e., about 4lbs. to the square inch. On the other hand, in many examples the air sustains almost no condensation whatever by the use of blast-fans, owing to the imperfect character of the pneumatic apparatus, the feed-pipe and its junction with the millstone-case not being air-tight.

Our subject here divides itself into two channels, so to speak—the *first*, to account for the erroneous experiments from which are derived the above data of 6 cubic feet, and 900 cubic feet of air passing through the millstones into the stove-room; and the *second*, the importance of the smallest additional quantity of air in grinding.

The former of these (the *first*) belongs to the exhaust apparatus, and will be disposed of under that head, simply observing here, in passing, that the error appears to have arisen

in the measurement of rarefied air in motion, the actual quantity of air that passed through between the millstones being in the first case rarefied to 6 cubic feet, and in the second example to 900 cubic feet, which is perfectly in accordance with established data in pneumatic science, as will subsequently be shown. The latter (the *second*) we shall now proceed to investigate under the centrifugal and fanning action of the runner.

At the eye of the runner there is comparatively no centrifugal or fanning action, but both actions increase with radius towards the periphery.

The centrifugal action of the grinding surface of the runner is somewhat antagonistic to its fanning action. This may be illustrated by the vanes of a common fan or winnowing-machine, which do not when starting into rotation propel the air centrifugally before them, as some have erroneously imagined; for if they did so then their action would be centrifugal. On the contrary, when they begin to rotate they compress the air on the blast side or in front, the air being an homogeneous body of uniform density throughout; but the moment the vanes begin to rotate, the air before them is compressed with a slight centrifugal action, which produces a partial vacuum behind, and into this vacuum the air rushes, giving rise to a current which the continuous rotation of the vanes keeps up, the influent current being termed the exhaust current, and the effluent current the blast current, according to the modern language of the mill. The same law of centrifugal and fanning action which is thus conspicuously exemplified by the vanes of the winnowing-machine, with whose action all our readers must be familiar, is also exemplified by the grinding asperities or dress of the runner, although the action of the latter is not so perceptible to the senses as that of the former. But although the sharp edges of the dress of the runner when in action are not so perceptible to the eye of the miller, as are the vanes of the winnowing-machine, the two nevertheless perform identically the same function, the influent current of air being drawn in between the millstones along with the wheat, the effluent current of air being blown out from between the grinding surfaces along with the meal into the millstone-case.

In the technical and expressive language of the mill, "grinding lively" is identical with "fanning action." This keeping of the meal upon the flouring surfaces of the stones in a state of life has a twofold signification. Thus, in the first place, the presence of air between the particles of meal prevents them from adhering to each other; and, in the second place, the presence of air, from its being kept moving onward in a spiral direction, from the eye to the periphery, also keeps the flour moving onward along with it: consequently, when the flour issues out from between the lips of the millstones in this lively state, it contains, in the interstices between its particles, a large quantity of air; so that, if you put your foot upon it when lying in the meal-bin, the compressed air will blow out the flour around your foot in a very conspicuous manner; and the same phenomenon may be seen exemplified by compressing a small quantity rapidly in your hand. Exactly the same phenomenon takes place between the millstones, when grinding lively.

Such being the facts of the case as to the twofold function of air in grinding, as above, it follows that compressed air, or an increase in the quantity of air used in grinding a given quantity of wheat, is simply an increase in the effect produced in both these capacities—*i. e.*, first, compressed air exerts a greater force in keeping the particles of flour from adhering to each other; and second, it exerts a greater force in blowing the flour outwards into the millstone-case, in which latter capacity it acts in conjunction with the centrifugal action of the asperities of the grinding surface of the runner upon the flour. The sharp edges of the dress of the runner, as it breaks down the round meal into fine flour, "kicks the latter outwards," if we may use a Yankee expression, thereby also subdividing the air, which, thus becoming further compressed, follows up its action with a correspondingly-increased force, the two forces being exerted in the same direction, the meal and air always going together. The notion expressed by some patentees and writers, that "a current of air" forced in between the millstones blows the fine flour outwards, across the path of the rough meal, leaving the latter fast between the sharp edges of the grinding surfaces, is highly erroneous; for compressed air rather prevents such being effected than other-

wise. And besides, were this erroneous notion actually carried into practice, the wheat would be blown through the furrows, without being ground. But the contrary of this is what all experience teaches, the tendency of the fine flour being in the opposite direction. In point of fact, a white cloud of stive is sometimes seen issuing from the feed-pipe, or hopper, up through the wheat, in examples where blast-fans are used, as in those in which they are not; and the reason is obvious, for the air in the interstices of the broken grain, towards the eye of the aperture in at which the wheat is fed, presents less resistance than the air in the interstices between the flour on the flouring surface of the stones. No doubt, towards the outer edge of the flouring surface, the extra force of the compressed air would have a tendency to clean the lips of the stones, as it were, more rapidly and effectually than air in its normal state; but, as this extra force is less than the force of the sharp, grinding edges, it would consequently have little effect until the flour had passed out beyond this grinding force—*i. e.*, it would only take effect between the lips of the stones, which do not grind.

Compressed air increases the functional effect of both lands and furrows. It has already been shown, in a previous article, that the lands form the true grinding surface, and that the function of the furrows is to feed the lands with the broken grain and air; and millers have long been familiar with the fact that the more lively the lands grind, the better the furrows draw, and the faster they feed the grinding surfaces, and so on.

But, *per contra*, after all has been said that can be said in favour of "grinding lively," millers are familiar with the fact that there is a narrow limit to the draught of the furrows, which obviously involves a narrow limit also to the degree of compression with which condensed air can be used in grinding. Hitherto, the use of compressed air in grinding has been more a sham than a reality, the more popular theory being that of an exhaust, which means the very reverse of compressed air.

ON CONDENSED, NORMAL, AND RAREFIED AIR BETWEEN THE GRINDING SURFACES OF MILLSTONES.

Certain things in the landscape from the prominent position which they occupy are continually before the eye of the observer, and so it is with certain things put prominently forward in the march of improvement in mills and milling. One of those things crop out at the point from which we start on the present occasion—one which we should like to have avoided, had such been consistent with the demands of our subject; and that peculiar thing is, the so-called "plenum exhaust," one of those new-fangled ideas which has received some rather queer definitions. It has been said that Englishmen have an instinctive hatred to all new-fangled notions in politics when they first make their appearance, and not a few appear to carry this instinct into the region of applied science in milling. But without further apology for again exposing the improper use of the word *plenum*, according to the definition put upon it by the patentee who first used it, the facts of the case as involved in this part of our subject cannot be passed over in silence; for when people advance new theories, and affirm that they carry out those theories into practice with comparative success, then both the new theory and the new practice are not only open to public investigation, but in the present case imperatively demand it of the agricultural press.

The popular meaning of "currents of air" between millstones is evidently much exaggerated; but this may be passed over, as it is no doubt done with the best intention possible to the public welfare. When twice the quantity of wheat is ground per hour by the use of a combined blast and exhaust, as compared with the old plan of the atmosphere in its normal state, either the velocity of the current of air or its volume is doubled. The latter measured vertically is incompatible with the production of an equally fine sample of flour, an equal quality of flour demanding a correspondingly uniform closeness of the stones at the flouring surface. It follows therefore that the former—*i. e.*, twice the velocity—becomes the rule in grinding twice the quantity of wheat, the runner making a given number of revolutions in both cases per minute, the length of the current being measured from the eye to the periphery along the furrows. But to this measurement of the

length of the current of air through between the millstones an objection must be here made; for in a previous paper it was shown that the wheat and air moved together in a spiral path from the eye to the periphery. And as it was shown in the preceding article that the ratio of space occupied by the wheat and air remains the same whatever may be the velocity and density of the air, it follows that the length of the spiral current of air and wheat must be shortened probably one-half, to make up for twice the velocity, or half the time for a given quantity of wheat and air as compared with the normal rule. We say advisedly probably one-half the length of the current, for this must not be taken as an established rule, the different lengths of the spiral paths or currents when grinding different quantities in equal times being left an open question for the solution of future experiment. We only suggest here that the rule of a fixed ratio of space (*i. e.*, 7 to 1) points to probably shortening the spiral length of the current between the stones to about one-half, approximately speaking, for the sake of practical argument, reminding the reader at the same time that mathematically the rule is not exactly correct, the passage of air through between millstones being subject to the laws of friction, as in passing through pipes, &c. But the above approximate rule of one-half the length will be sufficiently near the truth for the argument at issue—*viz.*, to reconcile the rule of the fixed ratio of space with the popular notion of a current of air, together with the practical fact that twice the quantity of wheat is actually ground in a given time, and for this the shortening of the current as above will suffice to reconcile the facts of the case with the established doctrine of velocity and volume in pneumatic science.

The volume of air in the case under notice (plenum exhaust) must, according to hypothesis, be condensed. To what degree proof is wanting. But in the absence of such proof, we shall assume, for the sake of practical illustration, that two atmospheres are condensed into the bulk of one, although this hypothesis greatly exceeds the truth. In other words, according to the plenum-exhaust doctrine and practice, four times the quantity of air, according to this hypothesis, passes through between millstones at Deptford in grinding twice the quantity of wheat, and of this quantity two atmospheres are exhausted into the stive-room, along with the hot breath and stive, these forming the plenum of dusty air; the other two atmospheres (forming the normal supply) passing out at the meal-spout along with the flour, as when grinding without a blast, the air between the stones and in the millstone-case being at its normal density. The former two atmospheres, we repeat, form the plenum of dusty air forced through between the stones, and these are said to be sucked away to the stive room by the exhaust-fan as fast as they issue out into the millstone-case, but without employing a sufficient exhausting power to induce a current of air between the millstones without a blast. True, the patentee of this plenum-exhaust proposition also claims the exhausting a plenum of dusty air without a superadded blast from a blast-fan, the fanning action of the runner producing the plenum of dusty air in the millstone-case in this example.

The scientific reader will readily perceive that the statements and claims expressed in the last paragraph place the practical question at issue, relative to the density of air between the stones, in the midst of cross purposes of a very conflicting character. If, for the sake of illustration, we continue the assumption of a pressure of two atmospheres between the millstones, when a blast fan is used, and only the pressure of one atmosphere when grinding without a superadded blast, then in the former case two atmospheres will be required in the millstone case to balance this pressure, so as to preserve an equilibrium; and in the latter case, one atmosphere in the millstone case will balance one atmosphere between the stones. Three questions therefore arise for solution—(1) the effect produced by an exhaust fan when a pressure of two atmospheres is used; (2) the effect produced by a blast-fan when the pressure of one atmosphere is used; and (3) the exhaust effect produced by the meal in flowing down the meal-spout in each of these examples, including the fanning and blast action of the runner.

(Ex. 1.)—The exhaust action of a fan always rarefies the air. Thus, with a pressure of two atmospheres between the stones, as in the first example, and two in the millstone case, then if one of the latter is exhausted the equilibrium would be destroyed, for there would then remain only a pressure of

one atmosphere in the millstone case to support the pressure of two atmospheres between the stones, consequently a current of air due to the pressure of one atmosphere would be induced through between the grinding surfaces, according to the common popular notion of exhaust, which is contrary to the common definition of the plenum-exhaust theory. In point of fact, it is virtually disclaimed in the above quotation, from the specification of the patentee "not employing a sufficient exhausting power," &c.

(Ex. 2.)—In the second example of pressure of one atmosphere between the stones with an equal pressure in the millstone case when the latter is removed by an exhaust fan, an effluent current through between the millstones will be induced, with a force due to the pressure of one atmosphere—*i. e.*, a pressure of 15 lbs. to the square inch, according to the common calculation at the level of the ocean.

(Ex. 3.)—The last example is one of a mixed character, and what is more, it puts in jeopardy the practical existence of the two former ones—the first and second. Thus the continuous flow of a current of meal down the meal-spout exhausts more air from the millstone case than what presses through between the stones when grinding without a superadded blast, the back of the upper stone being open, so as to supply the effluent current at the meal-spout with the excess of air thus carried off by the meal. But in the case before us the eye of the upper stone is so closed as to cut off access to air down between the back of the upper stone and the case, so that the exhaust action of the meal in flowing down the meal-spout draws its total supply from between the millstones, which is insufficient for that purpose—more especially when the stones are grinding heavily. Hence, to supply this demand, there is for the most part, in practice, either an imperceptible current of air up the sides of the meal-spout into the millstone case, or else some artificial mode of regulating the supply of air to suit the demand of the meal by slide valves, peg holes, screens, &c., as stated in a former paper. The ordinary plenum of air in the millstone case is therefore insufficient to supply the down exhaust draught of the meal from the meal-spout; so that when the ordinary plenum is removed from the millstone-case by an exhaust-fan, the exhaust action of the fan will be substituted for that of the down exhaust current of meal; so that the effect produced upon the current of air through between the stones will remain as before—*viz.*, that due to a pressure of one atmosphere on the influent current, *i. e.*, the influent current flows in along with the grain with a force due to the pressure of one atmosphere.

Some deny that the fanning action of the grinding surfaces of the stones without a superadded blast produces a plenum of air in the millstone-case—the effluent current from the meal-spout being always equal to the influent current at the eye of the upper stone—along with the grain. The principal argument upon which this objection is based, is that of a lake through which a river flows; but the objection is untenable, and the argument advanced in its support not applicable, as the surface of the lake is always higher than the plane of the surface of the influent stream; so that were it confined in a case there would be a plenum or head of water, while the lake is a head of the effluent stream; for although the excess of pressure in the millstone-case over that of the atmosphere is chiefly due to heated air, there is nevertheless a slight extra pressure from increase of quantity also. But of this more after, when we come to discuss the details of the millstone-case separately; at present we must confine our observations to the exhaust action of the meal in carrying air along with it down the meal-spout, and the effect which that exhaust has to induce a current of air between the stones.

We have thus two kinds of plenum-exhaust—the normal and artificial—and these require to be carefully distinguished the one from the other in the investigation of the effect they respectively produce upon the air between the millstones.

What the inventor means in his specification (No. 12,636, 1849) by the former, the natural kind—*i. e.*, plenum-exhaust without a superadded blast—has reference to all excess of pressure within the millstone-case over that of one atmosphere, whether it is produced by heat, vapour, stive, or by air discharged from between the stones; and what he means by the second kind, the artificial plenum, is the addition of the air produced by a superadded blast to the natural plenum.

In another class of patents, under each of the three kinds of exhausts introduced into this country from America, France,

and Holland prior to 1849 (the date of the plenum-exhaust), more than the plenum of dusty air (according to the above 1849 patent) is exhausted from the millstone-case; the pressure within it being less than that of the atmosphere; in other words, a partial vacuum is produced in the millstone-case. Into the details of these we do not go at present; the question now under notice being the effect produced upon the current of air between the stones by a partial vacuum. And, what is more to the point as a practical question of fact in milling, the partial vacuum is the only one that merits a serious consideration; for in the mill there is no such thing as plenum-exhaust, according to the above definition; the successful rule being invariably a partial vacuum—i.e., the more the air in the millstone-case is rarefied, the more successful the practice, other things being equal. From the magnitude and importance of the exhaust question to the readers of the *Mark Lane Express*, we propose devoting a whole paper to its details; so that in the remainder of the present one we shall only dispose of those points raised in the premises not yet discussed in the form of proportional propositions.

The effect of exhaust in this partial-vacuum sense is proved by experiments to be an increase of air between the grinding surfaces of millstones, and the increase is directly as it increases the speed of grinding, the ratio of the increase of the current of wheat to that of the air being always 7 to 1, in bulk, as formerly shown; but in the ratio of quantity probably rather more than this, when grinding very lively, owing to the condensation of the air, one cubic foot of air at the common density of the atmosphere being used to five cubic feet of wheat, i.e., the ratio of 5 to 1. And the increase thus produced takes place, as formerly explained, by the shortening of the spiral path which they traverse from the eye to the periphery, there being a corresponding decrease of time to the increase of speed of grinding, and so forth.

This increase of air between the stones, more especially between the flouring surfaces, is, in the technical language of the mill, an increase in the liveliness of grinding, or simply "grinding more lively."

This increase of liveliness upon the flouring surface is produced by a diminution of heat and vapour, as previously explained, the reduced quantity of heat thus produced being carried off by the rarefied air in a manner so as to prevent its accumulation in the millstone-case and stones, both being kept cool as compared with the old system, in which the larger quantity of heat-producing and increase of liquification thereby filling up the interstices between the particles of meal upon the flouring surfaces, to the exclusion of air; whereas the reduction in the quantity of heat produced leaves more space for air, thereby producing livelier grinding.

In the technical language of the mill, the production of liquification and the filling up of the interstices between the particles of meal upon the flouring surface, to the exclusion of the normal quantity of air, is known by various local terms, such as "clogging," "glazing," and the like, these being different in different localities, but in every case the meaning is one and the same, and easily accounted for, in accordance with the established laws of physical science, when the facts of the case are recognised as above.

The popular notion that the air is sucked or exhausted through between the millstones, on the principle of air rushing into a vacuum, is, if possible, something worse than a mistake. This will appear in its true light when it is borne in mind that there are two antagonistic forces involved, the one the force of the grinding surfaces, and the other the force produced by the exhaust; and as the former is by far the greatest, the latter can have no practical effect in exhausting the air between the stones, even were a perfect vacuum produced in the millstone-case. The fanciful but fallacious idea of sucking the fine flour through the particles of coarse meal fast between the flouring surfaces has already been disposed of as incompatible with the wedge-shaped space between the stones and the closeness of the stones at the flouring surface required to produce fine flour. And even granting for the sake of argument, that it was compatible with the wedge-shaped space, the ratio of space occupied by the wheat and air would remain unaltered, for the exhaust cannot suck out the fine flour without sucking out air at the same time, and *vice versa*; but the increase of speed in grinding is contrary to this hypothesis, so that it tosses the former to the winds along with the latter. Moreover, were this sucking theory true, the effect produced

upon the flouring surface would be an increase of heat, liquification, &c., but a decrease of lively grinding, which is also the reverse of what universal experience teaches. In short, from whatever point of the compass it is viewed this popular sucking idea vanishes into thin air.

ON THE DENSITY OF THE ATMOSPHERE IN THE MILLSTONE CASE AS AFFECTED BY BLAST AND EXHAUST APPARATUS.

The old hand-mill and ass-mill were not inclosed in a case. In the patriarchal period, when they were in daily use, the modern title of "dusty miller" was unknown. At that time the stive did not float in the atmosphere, to powder people's clothes, until the dressing of the meal was commenced. But as soon as the hot grinding system began, and the runner to be driven at a rapid velocity, floating stive was produced, when Necessity, the mother of Invention, gave birth to the millstone case; and to that date the miller may trace the fountain-head of the major half of all the difficulties in the mill; and, doubtless, many will find an interest in tracing their troubles to the fountain-head.

But stive does not float in a vacuum; and whether the pregnant idea which this fact suggests can be said to be the legitimate parent of plenum exhaust and the other members of the modern exhaust family or not, the fact itself is nevertheless significant enough, and highly instructive in many respects, while it gives rise to numerous practical questions that demand of the miller an experimental solution. Thus the particles of floating stive are, doubtless, not all of the same or equal weight, so that the finer or lighter particles will float in an atmosphere less dense than will the coarser or heavier particles. Thus far, reason may fairly solve the problem to the satisfaction of practice in general; but manifest as the soundness of the solution may be, experiment is nevertheless imperatively necessary to determine the matter, no less to the satisfaction of science than the demands of progress in the mill. In other words, by reversing the question, it may be put in the form of an interrogatory, thus: Which of all the exhaust systems produces the least stive? And which of all the blast systems or compressed-air systems produces the most stive? The two questions are, in practice, inseparable; for if stive will not float in a vacuum, so, on the other hand, air may be compressed to a degree to carry flour in suspension which would not float in air at the ordinary density of the atmosphere. This is illustrated by the rising and falling of the barometer with the changes in the weather indicated by the same, as experienced; and, what is more, these barometrical indications further prove that vapour at a low temperature will not float in a vacuum, but, on the contrary, more readily in a dense atmosphere than in a rarefied one—temperatures being equal.

In the preceding pages of this article the different kinds of exhausts were, for the purpose of special argument, divided into two classes—viz., plenum-exhausts and vacuum-exhausts. From the former being an unpopular expression, and also improper because it has no reality to represent it in practice, i.e., *no means has yet been discovered for effecting the third kind*, the division is, of course, subject to objection. It is necessary to mention this in order to avoid misunderstanding; but, using the division as formerly merely for the sake of argument, the plenum-exhausts produce the most floating stive, and the vacuum-exhausts the least quantity of suspended stive in the atmosphere of the millstone-case. And the same conclusion applies to vapour; the plenum-exhausts producing the largest quantity, other things, as temperature, &c., being equal. The first and second kind of plenum exhausts have both been in use, and are in practice at the present time.

A very cursory glance at the facts of the case will suffice to show the soundness of both these conclusions. Thus, in the case of plenum-exhausts, the density of the air in the millstone-case is presumed to be preserved equal to that of the atmosphere. Before the exhaust is applied the air is of greater density, consequently more stive will float in it; but the discovery having been made—or rather assumed to have been made—in 1849 that the exact density of the atmosphere is the true degree of pressure (15lbs. to the square inch) for producing the talismanic effect required by millers to economise the stive, and as the atmosphere is of different densities at different altitudes—we may, for the sake of carrying out the argument in scientific form,

farther assume the altitude of the Deptford Mills, or London, the true level contemplated by the inventor—it follows that the object of the improvement covered by the discovery is to exhaust this surplus density, or plenum, in the millstone-case, and, by so doing, less stive will float in its atmosphere; while, with this surplus air, the stive and vapour are at the same time removed to the stive-room. On the other hand, the vacuum-exhaust, or partial vacuum-exhaust, involves a rarefied state of the air in the millstone-case; and, as this rarefied state is kept up by the continuous action of the exhaust-apparatus, less stive will be removed from the meal as it issues from the lips of the stones to float in this less dense atmosphere of the millstone-case than in the above plenum example of a greater density; and the argument also applies to vapour at the low temperature in question. The rationale of both is thus simple and conclusive in each of the two cases—viz., a plenum-exhaust separates more stive from the meal than a vacuum-exhaust.

The third kind of plenum-exhaust not being a practical question in the mill, we must drop it at present, its true place in the series of papers being that of a fallacy, &c., and confine our observations to the details of the different kinds of exhausts previously noticed, taking the American flour-pump elevator as an example of the first kind of exhausts, and in which the flour is elevated by the force of the exhaust current; the French improvement of the American flour-pump, patented in England in 1846 (viz., No. 11,064), is an example of the second kind of exhausts—one in which the eye of the upper millstone-case is closed and the air in the millstone-case exhausted to a degree of density insufficient to elevate the meal, the meal and stive being removed together, either by the common travelling and elevating apparatus in use, as creepers and cup travellers, bands, or else down an inclined chute to a flour-bin below; and, for an example of the third kind of exhausts, the exhausting of the stive, hot air, and vapour from the millstone-case through a separate tube from that which discharges the meal, the exhausting power producing a partial vacuum.

In the first of these three examples the air within the millstone-case is less dense than that of the atmosphere, otherwise it would not flow into the millstone-case; but of greater density than either of the latter two. The third example embraces those most commonly in use, although erroneously termed plenum-exhausts; and in all of them which have come under our notice the air in the millstone-case is more dense than in the second. It follows, therefore, according to the above general rule—viz., the quantity of floating stive is directly as the density of the air within the millstone-case, that the first example produces and removes most stive, the third example the next largest quantity of stive, and the second the smallest quantity of floating stive. The same data apply to vapour, assuming that temperatures and other things are equal—i.e., that quantities of heat, vapour, and stive are produced and discharged into the millstone-case.

Other things, however, as the quantities of heat, vapour, and stive, are not equal in each of the above three kinds of exhausts—indeed they cannot be so; while under different examples of each kind, heat, vapour, and stive are very diversified as to quantity. It has been shown, for instance, that a difference in the density of the atmosphere in the millstone-case produces a difference of temperature; a difference of temperature, again, produces a difference in the quantity of vapour; while a difference in the quantity of this latter produces a difference in the speed of grinding, and so forth. Hence the innumerable details to which such diversities give rise—details which are, perhaps, more of a chemical than mechanical character (as stated in a previous paper); although, on the other hand, such chemical phenomena are produced by some diversity or other in the mechanism and working of the exhausting apparatus.

The facts of the case in each of the three kinds of vacuum-exhausts can hardly be misunderstood by any tyro in mill-mechanics; but, owing to the hold which plenum-exhaust has upon the public mind, and the fallacious notions at one time generally entertained, but now for the most part shaken to the winds, it will be advisable to go into the facts of each kind of vacuum-exhaust separately in detail, so as to distinguish it from plenum-exhaust.

(1). In the American elevating flour-pump, a perfect vacuum being produced under the piston, the air in the millstone case rushes into the elevating tubes with a force due to that of the

atmosphere, 15lbs. to the square inch; the pumps working, for example, on the exhaust principle, at the top of the elevator in the hopper-bay room. If we assume that the pumps are worked on the blast or force-pump principle, the same effect would be produced, only in this case the pumps would be below near the millstone-case, while the air that blows the flour through the elevating-tube would be compressed air to the extent required by the reaction of the meal; but on the exhaust side of the piston, or when the piston was rising and exhausting, the air as it flows into the piston-chamber or cylinder would be rarefied air. And the fact that the air of the atmosphere flows into the millstone-case proves that the air in its interior is less dense than that of the atmosphere. On the other hand, were an opening made in the millstone-case under plenum-exhaust, the air in the millstone-case would flow out at such an opening, because the pressure inside is always equal to or greater than the pressure outside. To some extent the fanning-action of the runner, especially when furnished with vanes on the periphery, has been said by some to produce a compressed current up the elevating-tube; but such in point of fact is a mistaken notion, and even were it not, instead of being an objection to the above data, is the reverse, for it does not in the slightest degree reduce the exhaust-action of the flour-pump, which must always be taken as the index of the degree to which the air in the millstone-case is rarefied, as also of the velocity and force of the influent current of air to feed the pumps; no doubt the weight of the meal being elevated up the elevating-tubes increases the density of the air above what it would be were there no meal suspended in it, but it cannot increase it to the density of the atmosphere outside.

(2). In the second example, the influx of external air is excluded from the millstone-case under the modern but fallacious expression of "closing the eye of the upper millstone," so that the air in the millstone-case is greatly more rarefied than in examples of the first kind, the whole of the air exhausted passing through between the grinding-surfaces. The actual degree to which the air has been, and is now being, rarefied in the millstone-case is a question which cannot be satisfactorily answered, nothing having been done experimentally to determine the actual degree of exhaustion; at the same time, from the given smallness of the quantity of air that passes through between the millstones, the capacity of the cylinder, and the number of strokes of the piston, the millstone-case may be kept rarefied to a degree which may thus be approximated, and at no great expense of motive-power to work the pumps, as cylinders of a small diameter would be amply sufficient to exhaust all the air which thus passes through between the millstones, although rarefied several hundred times. And the soundness of this conclusion will appear more manifest when it is borne in mind that all the air thus exhausted would only fill up the interstices between the particles of flour, were the air not rarefied air, the flour-stive and air being removed together through the tube of the elevating and conveying apparatus.

(3). In examples of the third kind, the principal amount of stive with a portion of the air and vapour is removed from the millstone-case into the stive-room by the exhaust-fan, while the meal exhausts the remainder of the stive, air, and vapour down the meal-spout.

The exhaust process of the proposition thus enunciated has two active exhausts, the meal and the fan, in continuous operation, if there is no exhaust-valve or check-fall in the meal-spout to prevent an up-current; but with an exhaust valve, the exhaust action of the meal would then be intermittent; consequently the proposition is one of cross purposes, as stated in a previous paper, in which attention was drawn to the exhaust action of the fan up the stive-spout, being against the natural exhaust action of the meal down the meal-spout.

We have now to bring up part of the details of this question of cross purposes, leaving the remainder to subsequent papers so as to avoid repetition.

The air in the millstone-case in examples of this kind of exhaust is rarefied as in examples of the second kind, although the mode of exhausting the air is less perfect, owing to the different methods of discharging the meal down the meal-spout. Thus with flap or hinge-valves, balance or louver-valves, or slide-valves, or check-falls, the exhaust action of the meal is intermittent, the meal being discharged in gulps or small quantities at a time, so that between the discharges or when the valve is

about the exhaust action of the fan or pump would be the same as in the second kind of exhausts, with this difference in the degree of exhaustion, that the weight of the meal when it accumulates to a certain quantity must exceed the pressure of the air outside, otherwise the valve would not open; and this weight it will readily be seen determines the degree of rarity of the air within the millstone-case. As soon as the weight of the meal exceeds this degree of rarity or outside pressure of the atmosphere the valve opens and allows the meal or the greater part of it to flow out, but at every such discharge of meal there must be an influx of less or more air into the millstone-case up the meal-spout; and this influx of air up the meal-spout may perhaps be equal in quantity to, if not greater than what passes through between the millstones. Hence the difficulty at getting the actual facts of the case at issue. But whatever may be the actual supply of air at the density of the atmosphere from both these sources, its volume is so rarefied as to feed the exhaust action of the fan and meal in accordance with the established laws of physical science, *i. e.*, the pump barrel is filled at every stroke fall. In other words, although the question at issue is one of cross purposes its solution is manifest and in perfect harmony with the established laws of science, as will be shown more in detail when we come to examine the quantity of rarefied air thrown into the stive-room and the compression of that rarefied air to its original bulk.

As a question of fact in practice, the additional quantity of air discharged in each of the above three cases into the millstone-case by the use of blast and exhaust fans, as compared with the normal supply when neither is used, is so small as hardly to merit notice. True, according to experiments recently made by certain civil engineers referred to in a previous paper, the additional quantity of air is considerable; but such experiments have already been shown to be unworthy of any reliance, owing to the erroneous manner in which they were made, the air measured being evidently rarefied air, but counted as of the normal density of the atmosphere. Hence the fallacious conclusion, for air may easily be rarefied ten thousand times.

In each of the above three kinds of exhaust the air is fed in at the eye along with the grain, and discharged from between the grinding surfaces all round the periphery of the millstones, but generally it is exhausted through a spout at one side, and this again involves another series of cross purposes of a very anomalous character in certain individual examples, satisfactorily accounting for failure in some, bad unequal work in others, while it endangers the very existence of that fine-spun modern theory of *plenum exhaust*. Thus, in the American elevating flour-pump example of the first kind, the principal supply of air for elevating the meal is fed in at the eye of the upper millstone, from whence it passes in a direct current radially to the meal-spout; while the air from between the stones is being discharged in the opposite direction, for say three quadrants of the circle. What may be the actual effect thus produced upon the aëration and ventilation of the millstones we shall not presume, in a concluding paragraph. Suffice it to say at present, that the exhaust action cannot be of equal force all round the millstone-case, hence the air within it cannot be of equal density, *i. e.*, unequal things cannot be considered equal according to the laws of physical science, let patentees and their patrons say what they may to the contrary in patent law suits. In examples of the second kind, the exhaust action of the flour-pump, or rather air-pump, is more uniform, as it now draws its supply of air wholly from between the millstones, all round the periphery; but still the force of the exhaust action is somewhat greater at the side next the meal-spout than in the opposite side, but the air in the case being considerably rarefied the difference in its density will not be great.

ON THE COMPARATIVE MERITS OF THE DIFFERENT KINDS OF VACUUM EXHAUSTS.

In the preceding paper two plans were noticed for economising stive and obviating heating, &c., the one under the second kind of vacuum exhaust, and the other under the third kind of vacuum exhaust. In the former the stive and flour are removed from the millstone case by a common spout, as formerly shown; but in the latter a portion of the stive is separated from the meal—one portion being exhausted down the meal-spout by the exhaust action of the meal, and the

other being exhausted up into a stive-room by the exhaust action of a fan. Both plans were introduced into this country from France in 1846, the former under patent No. 11,084 and the latter unpatented. In a former article objections were raised to the practice of separating the stive from the flour, as in patent No. 12,636 of 1849, and in the French and Dutch plans introduced, the former into England in 1846 and the latter into Scotland in 1848, both without patent, with a long list of plans for thus separating the stive, patented since 1849, and this objection has been repeated in several subsequent papers, but without going into the practical details in proof of the soundness of the conclusion thus arrived at, the objections being generally put in the form of an interrogatory. We are now in a position to go into such details of proof, and also to discuss the comparative merits and advantages of both plans, so as to show the progress thus made in the general march of improvement in mills and milling up to this date.

As there are several varieties of each of the two kinds of exhaust in question, and as many of these are worthless, we shall select two examples—one from each that are the nearest to each other in merit, or in the effects which they respectively produce. In other words, we shall select two examples constructed on the most improved principles, as this will enable millers to institute comparisons each with the exhaust apparatus of his own mill, where either of the kinds is in use. It will also, for the sake of brevity and perspicuity, be advisable to give to the three kinds of vacuum exhausts technical names, the better to distinguish the one from the other in a manner to render them more intelligible to millers in general. Thus, the first kind of exhaust, *i. e.*, the American flour pump, from its being an elevating vacuum exhaust, may, with propriety, be technically termed "Elevating exhaust." We do not intend to do more than mention this kind at present, as it has fallen into desuetude, and, from its approaching closely to the character of *plenum exhaust* in the degree to which the air is rarefied in the millstone case, &c., what little we have to say of its merits and demerits will be said with more advantage under the article *Plenum Exhaust*.

The second kind of vacuum-exhaust is the former of the above two under consideration in this paper; and as the air, stive, and vapour are exhausted through the meal-spout into the meal-room, it may, therefore, be technically termed either the "meal-spout-exhaust" or "meal-room-exhaust." We shall adopt the latter as the more scientific and comprehensive, as a single meal-spout is liable to objection, and as several propositions are just now enunciated for practical solution which the term "meal-spout-exhaust" would not cover; but as the meal and stive are economized together, without being separated, "meal-room-exhaust" covers the process in accordance with the scientific demands of technical terms; and, as the air, stive, and vapour in the third kind of vacuum-exhaust are exhausted and blown into a stive-room, it may therefore be technically termed "stive-room-exhaust," as this term covers the process. The elevating blast of America may be termed elevating blast exhaust. As the natural flow of the meal down the meal-spout exhausts from the millstone-case the air that passes through between the stones, but leaving the air in the millstone-case when there is only one meal-spout of a somewhat greater density than that of the atmosphere, it is a species of *plenum-exhaust* according to the modern interpretation put upon the word *plenum*, there being little or no extra pressure inside when the stones are grinding lively and cool, or where there are several meal-spouts. It may, therefore, be termed the "natural *plenum-exhaust*," while the patented proposition of removing all extra pressure within the millstone-case over and above that of the atmosphere, by means of an exhaust-fan in combination with the natural exhaust, may be termed the "artificial *plenum-stive-room-exhaust*" or simply "artificial *plenum-exhaust*." We have thus altogether three kinds of *plenum-exhausts* and three kinds of *vacuum-exhausts*; and these, for the sake of perspicuity, may be tabulated thus:

Plenum	1. Elevating blast-exhaust.
	2. Natural <i>plenum-exhausts</i> .
	3. Artificial <i>plenum-exhausts</i> .
Vacuum	1. Elevating-exhausts.
	2. Meal-room-exhausts.
	3. Stive-room-exhausts.

Of these six kinds of exhausts—all of which are now in use with the exception of the artificial *plenum*, which is doubtful,

as will subsequently be shown—we have, as formerly stated, selected the second and third of the vacuum-exhausts as the subject of our present paper, because they are the only ones that may be said to possess merit worthy of special notice. The remaining four will be discussed in a subsequent article, not on account of their merit, but because of the erroneous notions so generally entertained about them—erroneous notions which are greatly retarding the progress of permanent improvement in the mill, and which, therefore, require to be tossed to the winds for just no more than they are worth.

Very few of the meal-room exhausts which have been patented in this country are reduced to practice and in working operation at the present time, although the sequel will show that they possess more than equal merit, as compared with stive-room exhausts, which are now common in most large mills. Add to this the fact that the best stive-room exhausts are still subject to heavy patent charges, while meal-room exhausts are not; and the preference which has been given to the former (the separation of the stive) will appear all the more singular in the march of improvement.

This peculiar state of things is easily traceable to the following causes: *First*, The meal-spout exhaust was patented in 1846, as a communication, by a patent agent, who, if the proprietor of the patent, manifestly neither understood the subject nor the value of his patent if properly carried out; but most likely he had no interest in it. In short, nothing was done to carry the project successfully into practice; consequently, it fell to the ground, its merits being almost unknown to millers. *Second*, The stive-room exhaust was introduced by a wealthy miller, who worked it himself for several years, but upon a very erroneous plan, as will be shown under "Plenum Exhaust," he (the introducer) being ignorant of the true function of exhaust. At this time (1846), the general idea amongst millers was to separate and economise the stive, exhausting and filtering away the heated air and vapour at the same time; whereas the true theory, is to rarefy the air in the millstone-case to a degree, so as to prevent the separation of the stive, the heating of the stones, and the evaporation of moisture. The two theories, it will thus be seen, are so totally unlike each other as hardly to bear a practical comparison; and, as the latter theory was unknown to millers, or rather, perhaps, was overlooked by them, the exhaust apparatus for carrying it out was of course either misunderstood or undervalued. In 1849 the plenum stive-room exhaust was patented by a wealthy, persevering patentee, who gave, we are told, £10,000 for his patent (No. 11,342, 1849); so that, with a large capital invested and at stake, he was compelled, as it were, to fight the battle of Exhaust; and fought it he has, successfully, ever since, but whether as a plenum-exhaust or vacuum-exhaust we shall in the meantime leave our readers to determine, the facts of the case being amply sufficient to speak for themselves, and answer the question. *Third*, Ever since 1849 there has been an amount of legal proceedings raised against all who have adopted stive-room exhausts, such as almost to keep both the bar and milling trade "stive-blind," as we formerly expressed it, for the want of a better term, so that millers have all the time been afraid to adopt any other kind of exhaust, for fear of infringing this one! Hence the general conclusion, from these three causes; for, had the meal-room exhaust received an equal amount of patronage and improvement which the stive-room exhaust has received, we are that public opinion would be otherwise expressed than it now is, as to the comparative merits of the two.

We have thought it proper to notice the above state of things, purposely to enlist the unbiassed attention of our readers in the investigation of the two plans of exhaust in question, in order that they may be able to determine their comparative merits, such being essentially necessary to advance the true line of progress in this branch of milling.

The exhaust and stive-economising apparatus of each of the above two plans may be thus described for the purpose of comparison:—

MEAL-ROOM EXHAUST APPARATUS.

1. Closed eye of the upper millstone.
2. One discharge spout and effluent current from the millstone case.
3. Two eductive exhaust-valves in the meal-spout leading down from the elevator, situated in the meal-room, one to each air-pump.

4. Two inductive valves, one in the receiver of each air-pump.

5. Two air-pumps for exhausting the millstone case, both working at the top of the meal-spout of the elevator, the meal and stive flowing down together into the closed hopper of the bolting machine.

6. A force air-pump or bellows for superadded blast.

STIVE-ROOM EXHAUST APPARATUS.

1. Closed eye of the upper millstone.
2. Two discharge spouts and currents from the millstone case.
3. One eductive exhaust-valve in the meal-spout of the millstone case.
4. A stive-room and filtering apparatus.
5. A cylinder or screw-fan for exhausting the millstone case.
6. A cylinder-fan for superadded blast.

In comparing the above analyses of the two plans of exhaust with each other, the first thing that must strike the attention of the scientific reader is the prominent fact that the difference between them is a question of special mechanism, both being constructed on the same principle. To the non-professional reader we may observe that the grand objects which each plan presumes to accomplish, and which both effect, are first and chief the rarefying of the atmosphere in the millstone case, so as to obviate heating, and the separation of the stive from the meal as already explained, and second to economise what stive is actually separated from the meal; and in effecting these it will be seen that the special mechanism of each plan performs the same or equivalent function of that of the other, while several mechanisms are identically similar in construction.

We shall *first* point out the special mechanisms and processes that are similar; *second*, notice equivalent mechanisms and processes; and *third*, contrast the comparative merits of the two plans.

(1). *Special mechanism.* The first and fundamental element of each, viz., the closed eye of the upper millstone, is identical in construction, which in principle may not inaptly be termed, from its importance, the *right-ventricle* of the vacuum exhaust system, an eductive exhaust valve being its *left-ventricle*. And this latter, the eductive exhaust valve, with the meal-spouts, may also be termed similar in construction, the only difference being two valves in the one, and two spouts in the other, each system having an equivalent for a spout and a valve as will subsequently be shown more at length, so that when the equivalents are taken into consideration, the two closely resemble each other.

Special processes.—The process of exhausting the air from the millstone-case, so as to rarefy what remains within, and thus obviate heating, evaporation upon the flouring surface of the millstones, thereby facilitating grinding, and lastly to obviate the separation of the stive from the meal when discharged from between the millstones, as explained in former articles, are identically similar. So is the superadded blast in each plan. All of which is so manifest as to render further detail under this head superfluous.

(2). *Equivalent mechanism.*—A cylinder, or screw-fan, doubtless differs in mechanism from an air-pump or a bellows; but the one is obviously the mechanical equivalent of the other when they perform identically the same function in the exhaust system; and as the actual differences between the two will be pointed out under the next head, we need not stop here to inquire what these difference are, as our readers must be familiar with them. The two spouts of the stive-room system have their equivalents in the inductive spouts of the stive receivers of the two pumps, the rapidly-revolving vanes of the fan acting as an equivalent to the second exhaust valve, or left ventricle of the other system. And the stive-room has its mechanical equivalent in the pump-receivers, and dressing machine in the meal-room, where the rarefied air is compressed into its normal bulk.

Equivalent processes.—Equal quantities of stive will be removed from the meal as it issues out from between the stones into the millstone-case in both examples, provided the density of the air in the millstone-case is equal the one to the other—i. e., provided the fan is equally effective as the pump in rarefying the air in the millstone-case, which, for the sake of practical illustration, may be assumed in the affirmative, al-

though the reverse is true, generally speaking, most stive being separated from the meal by the stive-room exhaust. So far the process in the one example is identical to that of the other. But the stive-room method of economising the stive is obviously only an equivalent process. In the meal-room exhaust example the stive is exhausted along the creeper and elevator tubes, in which in the process of dressing it is mixed with the meal; whereas, in the stive-room exhaust example, the stive is deposited on the floor of the stive-room, according to one patent, and on shelves of the stive department according to another patent; and at short intervals, as the stive accumulates, it is in such example swept up, and afterwards mixed with the meal. In both cases the stive is thus economised by mixing it with the meal; and as the meal-room exhaust example was the first invented, and is besides the more natural plan of the two, it follows that the other stive-room methods of doing the thing must be taken as only equivalent processes.

(3). On the comparative merits of the two varieties of exhaust almost nothing requires to be said, as the facts of the

case evidently sit in judgment themselves, and pronounce sentence in favour of meal-room exhausts on every point, save the removal of vapour; and even this one question must be left an open one, as under a proper exhaust the amount of vapour given off in the grinding is less than is generally imagined.

It has already been shown that the air-pump is better than the fan, either for blast or exhaust purposes, owing to the small quantity of air of the density of the atmosphere that passes through between the grinding surfaces of millstones. Thus, if the air in the millstone-case has to be rarefied a thousand times to produce the proper degree of exhaustion, and if two cubic feet of air are all that pass through between the stones, and have to be thus rarefied per hour, the total volume of rarefied air would be two thousand feet per hour, and for the discharge of this small quantity a very small air-pump would be sufficient, and such could be worked at a fraction of the expenditure of motive power required to drive a fan at a velocity so as to rarefy the air a thousand times.

ENGINEER.

SIMPLE AND PRACTICAL METHOD OF HOP-GROWING.

PICKING, DRYING, AND PREPARING FOR THE MARKET, COST, PROFITS, &c.

OF THE SOIL FOR HOPS.—Medium loam is best, though any of the loam mixtures between the sand and clay will do; but the more sandy the soil the more manure is required to keep up the necessary fertility and preserve the plant from the effects of the drought and frosts; while the clayey soils require much manure to give them mellowness and prevent the ground from baking. In consequence of its porous condition, sandy soils require heavier and steady manuring; while after the first season clay, as it retains its fertilizing properties, requires but little. Prairie muck, being rather light and loose, is not so good; yet upon this soil, with proper cultivation, profitable yields are obtained. New land upon which one or two crops have been raised is best, as the vegetable fibres are well decomposed and the soil is in a fresh and vigorous condition. A medium loam exhausted by a series of wheat or corn crops, not having been drained of some of the essential properties, requires only the usual amount of manuring to bring it into fit condition. Elevated and level locations should be selected, as in low, moist places hops are exposed to the frosts and liable to rust. Root-planting seasons are from the earliest opportunity of grubbing in the spring to the 1st of June, from the 15th of August to the 20th of September, and from the 5th to the last of November. Suckers are planted from the time they appear to the 1st of August. Early spring-planting is advisable, as it admits of the plant growing beyond the harm of the cut-worm, and it will better withstand the early droughts, and perhaps yield a handsome profit the first season. Early fall-planting, with some cultivation and light manuring, will yield half a-crop the following season. November is an excellent time for planting; but one or two shovelful of manure to the hill are needed to protect the roots through winter. If fall grubbing is injurious to the yards, as some claim, apparently with no obvious grounds, fall-planting should be abandoned.

SEED ROOTS are cut into pieces containing two or three sets of eyes each, and are valuable in proportion to their soundness, the quantity of thread fibres they contain, and the species to which they belong. The majority of yards of Wisconsin are of the English cluster, originating in this section mostly from Jessie Coddington's, the first yard planted here. The vigorous habit, prolific condition, and richness of lupulin of the cluster give it preference in this climate, and with no adversity from lice or disease it will probably never find a rival in Wisconsin. The buds of the root should have a plump healthy appearance. Any root pithy or spongy, or having tan colour about the heart, or that can be crushed between the thumb and finger, is diseased, and should be rejected; for although it will grow, the body not having enough vitality left to establish a self-sustaining root, commonly, after reaching several inches in height, the vines will wilt and die; especially is this the case in a dry time. The body of a sound hop-root is nearly as hard as a grape-vine, and of a light colour, and the heart

generally of a lightish grey. Although roots are more or less diseased, mainly from the effects of freezing, with few exceptions they are generally sound enough for planting. To ensure success against disease and worms, three and four pieces are put in a hill, while really two good sound roots are sufficient. The planting is done in rows 8 feet apart each way, making 680 hills to the acre; though only 640 hills are commonly reckoned, a vacant space on either side left for turning the team being considered. Where land is valuable, as in the east, or space limited, as in villages, hops are generally planted but seven feet apart; but where land is plenty and cheap, as in the west, hops should never be planted nearer together than eight feet, and even ten feet would be better, as it would give more room for cultivation, lessen the shading, and give a freer circulation of air.

THE PLANTING.—The selected piece is ploughed and dragged, then accurately squared, stakes stuck at the four corners, and a row of short stakes stuck eight feet apart the entire length of each side. Now, a wire or rope—a wire is preferable, as it will not stretch—with a piece of red yarn attached to it every eight feet, and a sharpened stake attached to each end to manage it by, is stretched across the end of the piece. A man at each end carries the wire forward, and stops long enough at each stake to strengthen it, and give time for one or two boys with baskets of pins, 18 inches long, to pass along and place a pin at each piece of yarn. The stakes are removed, cavities made with the hoe, the roots placed in them an inch or so apart and covered about four inches deep, hills patted with hoe, and stakes replaced; or hoe out a funnel-shaped hole, incline the roots against the sides, with eyes pointing upwards, and cover an inch deep above the top ends; or punch perpendicular holes with a stick, put the roots in with eyes upwards, and press the dirt down against them. In late-spring or early-fall planting it is a good plan to wet the roots before covering. As a caution against breeding the dreaded hop-louse, which might perchance exist in the form of larvae or some other state in the dirt adhering to imported roots, the roots should be well washed in lime-water before taking them to the field. The planting completed, commence at the fifth hill of the fifth row, and take up every tenth hill of every tenth row thereafter, to within five rows of the opposite side, and replace with male roots, and put two stakes to the hill to distinguish them. The cost of cultivating the first season can be turned into profit by planting corn, potatoes, or beans between the rows, and cultivating with the hops. As pumpkins shade the ground too much and choke the hops, they never should be planted with them. To raise part of a crop the planting season, no other crop should be planted with the hops, and but one pole ten or twelve feet long placed to the hill. One, two, or three vines can be trained to the pole, according to the strength of the hill. If some judgment is not used, too many vines will be poled, and the productive

powers so over-taxed as to enfeeble the root, and endanger the prospects of the second crop.

THE MANURING is done in the fall, as it thus serves the double purpose of enriching the soil and protecting the plant from the winter frosts. Hops on clayey loams, having been well manured several seasons, requiring none, should be protected in winter with a fork-full of straw to the hill. Young yards require but little if any protection in winter, while old yards and bearing yards on sandy soil require much. About a bushel of barn manure to the hill on sandy soil is none too much; and as the soil approaches the clay, the quantity can be reduced till but two shovels-full to the hill are required. That the hops may not be smothered, the manuring should not be done till the 1st or 15th of November, or till the approach of winter. Of the various common and artificial manures, with the exception of sawdust, chips, and some wood manures, which are poor fertilizers, all appear to possess some fertilizing property suited to the hop. Barn, sty, and coop manures are excellent, answering every purpose, and being common products of the farm and a nuisance to the village and city, are preferable when to be had in proper quantities, as they are easily obtainable. But in this section, where hop-yards are growing on nearly every farm, and on half the vacant village lots are more than trebly increasing yearly, the demand cannot be supplied without resort to artificial or mechanical means. A compost made in the fall of the substances as in the order below given, placed in even layers, forming a mass sufficiently shallow to admit of becoming well frozen in winter, and allowed to stand till the following fall, when it will be needed, will have sufficiently decomposed, and form a most excellent and durable manure at a trifling cost: 5 loads of muck or damaged hay; 30 loads of marsh, swamp, or sink-hole muck; 10 bushels of nearly equal parts of leached and unleached ashes; 5 loads of straw; 10 loads of muck; 10 bushels of unleached ashes. Stock turned to straw-stacks, encircled with good fences, and allowed to feed and tramp them down through water, and yarded on them summer nights, will change them into manure suitable for fall use. Straw thrown into the sty often and plentifully used for horse and cow bedding, is rapidly changed into manure.

GRUBBING should be done by the 10th of May; the roots cut, assorted, and the good ones placed in a pit in the ground or in a cool cellar, to preserve them from sprouting as much as possible till ready to plant. It is not customary to grub the first season, as the seed roots are scarce, and it is thought to be of no benefit to the yards. The grub hoe has two sickle-shaped tines pointing forward, which are carefully drawn through the ground under the roots, in a manner not to injure the life-roots or bruise the seed roots. A sickle-shaped knife, used for cutting the seed from the bed roots, should be kept sharp and handled cautiously, that it may do its work without injury.

POLES AND POLING.—Any kind of pole, from 2½ to 4 inches in diameter at the butt and from 16 to 20 feet in length, is the proper size, though a smaller size can be used to good advantage for weak hills. By reason of its lightness and fine proportions, the tamarack pole is the best. Tamarack, cedar, iron-wood and white oak for hop poles are the most durable. Where poles are scarce twine can be used, which requires but one pole eight feet long to the hill, which once set is allowed to remain till decayed. A turn being taken around each pole in succession, the twine is stretched across the piece each way about six and a-half feet above the ground, to give plenty of room beneath for team-work. The yield is nearly the same as with poling, though the work of training the vines to the horizontal twine is nearly double. Unless the yarn is very strong, but two poles should be put to the hill the first season, and two vines trained to the pole. It is customary the second season to put three poles to the hill, and train three vines to the pole. The successful hop-grower has learned by experience that nothing is made by training more than two vines to the pole, and that if the hill is strong enough to admit of using more vines, there should be more poles added to support them. Beginners, for the want of experience, have found to their sorrow that training four and five vines to the pole with two and three poles to the hill has generally resulted in heavy growth of vines and an unusual quantity of dwarfed hops. It will not do to sacrifice the vigour of the plant in developing an undue quantity of vines at the expense of the top, though it is well to train one more vine to the pole than is needed, as

a precaution against accidents, and when the hill has grown quite out of danger, to cut it off. The poles, sharpened in the fall or early in the spring, are set 12 inches or thereabouts from the centre of the hill, and 12 or 18 inches deep, the depth depending upon the density of the soil. The iron-bar pole sticker is preferable to the patent auger, as by not withdrawing any dirt it leaves a hole with solid walls, so that the pole is not so likely to loosen, wriggle about, and perhaps tumble down the first strong wind. To prevent the vines from matting together at the top, the tops of the poles should incline from the centre of the hill not less than two feet.

CULTIVATION.—Before or after the poles are set, a furrow is ploughed away from the rows each way, and in the course of two or three weeks, when the hops are large enough for the first hoeing, is ploughed back again, and the ploughing continued to the centre of the rows. As but little hilling is required, the hoeing consisting mainly in loosening up the ground about the hills, and covering the weeds and surplus vines to add richness and moisture, the cultivation after this is done principally with a two-shovelled corn plough—a good substitute for the patent hop cultivator—passing twice or three times between the rows each way at two or three different times, as the soil may require. The hills should be made broad and flat, and at the last hoeing slightly lower at the centre, and no weeds should be allowed to grow. The practice of raised hilling is wrong, for the reason that the life root of the plant, established by nature near the surface, become so deep and shut out from the necessary warmth of the sun, that another set naturally grows out higher up, and yet another as the hilling is continued, till the plant is so much elevated that it is subject to serious injury from the droughts and will winter-kill. The first side shoot, originating from the seed roots missed in grubbing, are removed and used to fill out missing hills or plant anywhere. To obtain a full crop of seed roots the following springs the tops of the suckers appearing after the 15th of June are hoed off at the ground's surface.

TRAINING THE VINES TO THE POLES requires care and patience, and usually devolves upon the women and children till having grown beyond the reach of their industrious hands. Commencing when two or three feet long, the medium-sized vines originating well down on the crown (the top crown, called bull vines are not so good) are circled round to the poles to the left, and secured by means of woollen ravelings, from which time, with warm, sunny weather, they will climb with but little assistance, but require continual watching. Vines do not cling well to the poles in cool or cloudy weather. Through some unexplainable causes of nature, all the hop vine species, so far as I am aware, in climbing spontaneously circle with the sun, while nearly every other climbing plant most wonderfully circles in the opposite direction. After reaching a height of 10 or 15 feet, vines are often displaced and will not regain the poles without assistance. They are replaced by means of a self-supporting, portable step-ladder made for the purpose. Our hops are invariably ripe enough to commence picking by the 1st or 5th of September—known by the seeds beginning to brown.

PROVISIONS FOR THE SCARCITY OF HELP.—The rapid increase of hop-grounds in the main hop districts of Wisconsin will make it advisable, in the future in order that the crops of the larger yards may be secured in time to escape injury from the rust, with the meagre help that must necessary be employed, to commence the picking at least a week or ten days sooner than usual. The fact that the early-picked, unripe hops are lighter, and of less intrinsic value, is nothing to the grower, whose aim is to avoid loss by the operation, since speculators allowed to handle the hops, and reap the profit out of the consumer legitimately belonging to the grower, are glad to buy them for a prime or fancy hop, because of their mild, pleasant flavour, and fresh appearance, and pay enough more than for the fully ripened to make up the difference in weight. This system of early picking can be partially or wholly avoided by the removal of the manure from the hills of about half the yard at the earliest opportunity in the spring, and keeping the remainder in check, by allowing the manure to remain two or three weeks later, so that in maturing while picking the first, the other half of the yard will be ripening. Hops so ripe as to have commenced rusting are the strongest, heaviest, and therefore best for brewing purposes.

HOP PICKING ARRANGEMENTS.—Everything should be in readiness for picking, hop-house and kiln in repair, dry

wood and brimstone on hand, hop-boxes in repair and at their places, pole-starters and vine-cutters secured, sacks for conveying hops from the kiln made, a good supply and variety of provision for the table, extension dining tables, extra beds, and house ready to turn into a temporary hotel at a moment's warning. A good substitute for the patent pole-starter can be made by any blacksmith by attaching within 2½ feet from the butt end of a stout stick 8 feet long, an inch iron-bar, 18 inches long, constructed in nearly the form of the letter Y, with the long part banded and riveted to the stick and the inside of the outer prong well bearded. The vine-cutter is used for parting the vines where matted together at the tops of the poles. It is easily made in a few minutes by attaching an old scythe, scythe-fashion, to the end of a 16 feet hop-pole. Sacks for conveying hops are made of burlap, with a capacity of about 20 bushels. By means of transverse and longitudinal partitions, four legal hop-boxes, each 3 feet long, 2 feet deep and 18 inches wide, with a capacity of 7 bushels, are combined in one, so as to admit of four pickers to the box, each with her respective apartment. In the construction are used five 16 feet boards 12½ by ½ inches for the body; three 2 by 6 cross-pieces for the bottom, to support it from the ground and strengthen the box; two end cross strips for handles for carrying the box; two end upright standards of flooring 4½ feet long, with a 2-inch hole in the top ends for cross-pole, upon which rests the pole of hops while being picked, and six upright 1 by 2 inch strips for strengthening the joints. In the construction of the hop-house and kiln, capacity and convenient arrangement are most important. For a five, eight, or even ten-acre yard, a building with upright 20 by 40 and 18 feet posts (20 by 20 of it for kiln) and side lintel 16 by 40, with roofs forming a juncture on a direct line, will answer all purposes. The floors ought to be made of matched flooring, and the second ones at least 18 inches below the kiln floor. The kiln floor is made of 1 by 1½ inch strips, placed on the joist an inch apart and usually covered with barley, but heavy factory is better, as it retains the flour of the hop, which is quite a consideration. The building must have plenty of windows for ventilating, and be so constructed as to prevent any leakage from the doors, windows, or roof, by which hops are often damaged. It being better to line the inside; cheap, seasoned lumber will do. Two kilns are needed for a large yard, and convenient for a medium one, but as 120 boxes of hops (passable day's picking for a 10-acre yard) can be well dried on a 20 by 20 kiln every 24 hours, and it being essential to keep up the drying both night and day, but few growers will go to nearly double the expense of building an extra one when one will answer. Stone kilns, as they better retain the heat and do away with the dangers of fire by which hop-houses are frequently burned by ill-arranged wooden ones and carelessness, are preferable; but nevertheless, it being quite expensive and stone not always easily obtainable, as almost invariably has been the case, wooden kilns will continue to be used in the West. A round or square kiln, 18 by 20 or 20 by 20, and 18 or 20 feet deep, with rather a steep roof and swinging or stationary ventilator at its central apex for the escape of the steam from the hops, arranged as follows, will be found to answer the purpose: The room from basement sills to the eaves and to the apex of the ends is lathed and well plastered with one coat. The chimney is built from the round not nearer than 4 inches to the wall and inside of back part plastered its whole length. The distance between the lower floor (which consists of the bare earth) and the kiln should not be less than 12 or 15 feet, and there should be room enough left for a person to walk on the side of the kiln-floor beneath the rafters without stooping. If this distance does not exist it can be had by excavating the earth floor to the desired depth. The hop-stove is simply constructed, about 4 feet long, with grated bottom to admit of the deposit of ashes in the brick or cast-iron arch upon which it necessarily rests, and for the sized kiln described, should weigh not less than 600lbs. or 800lbs. These stoves are made in Albany, New York, and in Delton, Wisconsin. From the stove, located near the centre of the room, extends a 10 or 12 inch pipe perpendicularly to the proper height, then horizontally to within 3 feet of the wall, where the size diminishes to 8 inches, extending in opposite directions, and slightly ascending around the room enters the chimney in a T of the size as at the juncture with the stove.

POLES AND POLING.—The pipe should be at least seven or

nine feet below the kiln-floor, to give sufficient space for the heat to equalise before striking the hops, and not come nearer the wall any place than thirty or thirty-six inches, and then it is better to have the walls next to it covered with zinc. Where this distance between the pipe and kiln cannot be conveniently secured, strips of sheet iron suspended flat—about twelve inches directly above the pipe will have the desired effect by equalising the heat. At each of the four sides of the base is a 12 by 12 aperture for ventilating the surface and admitting air to mingle with the hot air, and force the steam of the hops through the top ventilator. Each air-hole has a slide-door that can be closed or opened, so as to admit air only from the opposite direction from which the wind may blow. A zinc curb two feet high surrounds the chimney at the kiln, to prevent the hops being scorched by contact. A raised walk 12 inches wide through the centre of the kiln from the outer door is essential to admit of a way for stirring up the hops and removing them without being obliged to walk into them and crush them with the feet (the usual way), and it preserves the cloth. Through a door on one side of the walk into the lintel, and a door on the other side into the room over the press-room, the hops are carefully removed when dried, to remain till having attained sufficient roughness to admit of pressing without crumbling.

HOP-PICKING TIME is when woman reigns in her glory—in compensation for service stands on an equal footing with man—is proudly conscious of her importance as she raises the high value placed on her labour, and beholds the decay of wealth hanging upon her will. From all quarters, bankers, farmers', merchants', and everybody's daughters, wives and grand-daughters, and the Biddies and the Bridgets that can and cannot be spared, actuated with the pleasant idea of the romance of the thing, of meeting old friends, of enjoying the hop dances, and "making lots of money," and having a splendid time in general, pack their trunks for several weeks absence, and depart for the yards, leaving mistress, mother, and husband to worry and fret over household matters and cross the hop-yards through the painful interval. At this time the country is alive with a moving army of 25,000 or 30,000 women on their way to the hop fields, making the valleys and woods resound with their merry songs and happy shouts, presenting an animating scene once witnessed never to be forgotten. There is a certain pleasant excitement about hop-picking that almost causes one to forget the fatigue of this laborious work. All the way from two to six boxes of hops are picked in a day by the single person, while three boxes are an average day's work. In the haste required in picking five and six boxes, stems and large leaves are generally thrown in, which condemns fast picking. The price of 50 cents per box with board, which has been paid for three seasons past, allows the industrious picker at this rate to make 2 dollars per day with little trouble. One man superintends two boxes in heavy hops, though he will find it difficult to attend more than one in very light hops. His duty is to pull the poles—first cutting the vines about two feet above the ground—and supplying the pickers with hops, to strip the poles of the vines and securely stack them between the rows so as not to cover any hills—hills covered with poles winter-kill—to keep the vines cleaned up round the boxes and pile them, to see that the hops are well and cleanly picked, to empty the boxes and keep an account of the number picked, and to remove the hops from place to place.

MOB LAW.—If the box-tender does not properly attend to his business—gets careless, and after a few warnings continues to permit the poles to strike the cross-pole and jolt down the hops, which pickers abhor above all things—no punishment is generally the result. One of the pickers, with a roguish, knowing look, silently leaves, as she has often done before, ostensibly to make a visiting tour to the other boxes; but, alas! soon she returns with an army of crinoline, and the disobedient masculine is seized and plunged head foremost into a hop-sack, the sack tied securely, and then picked up and "toted" and dragged about over the ground at a fearful rate; the mobbish party the meanwhile laughing, screaming, and yelling like devils. Spruce young men, while visiting yards, are occasionally put through the course of treatment to their perfect astonishment. When once seized, for a fellow to try to extricate himself—I don't care how much he may value his activity and strength—is worse than useless; for he is a "goner," which I can testify to from experience. About noon

the team goes around, and the sacks of hops are gathered from the field, and drawn and put on the kiln.

DYING.—The heat in the furnace-room is now raised to about 155 degrees, and raised gradually to about 165 degrees, and then gradually diminished till finished. When the hops are well warmed through, for a kiln of 40 or 50 boxes, one pound or more of brimstone, according to the condition of the hops, is burnt for the purpose of giving, by its bleaching effect, a marketable appearance and milder flavour—rusty hops requiring double the quantity. From the chemical effect that naturally takes place—causing the bleaching—by this use of brimstone, forming in the hop, by reason of its tanning properties, the principle of sulpho-tannic acid, its preservative qualities are injured, and properties for which it is valued materially changed. But since the market value is based on the appearance and mildness of flavour, who cares, if consumers don't? Two or three pails of water sprinkled over a kiln of dry and rusty hops to create a steam will produce a finer bleaching than ten pounds of brimstone, and without injury. As the hops are nearing dryness the heat is considerably diminished to avoid scorching them. In the course of ten or twelve hours the central stem of the burr has become dry and brittle, when the kiln is completed, removed, and replaced with a fresh one. Within two or three weeks the hops will have sufficiently toughened for pressing.

PRESS AND PRESSING.—With the exception of the lever presses, all hop presses have nearly the same structure. In respect to improvements in the lever works, for ease of management, power, and perfection, a press patented by Carpenter and Hutchinson, White Creek, Adams County, Wisconsin, last winter, is admitted to be the finest. In pressing, a piece of sacking two yards long is placed squarely and evenly on the bottom, the frame put together, hops thrown in and trampled with the feet gradually till having in as nearly as possible 200lbs., when another two-yard piece of sacking is placed evenly over the top and the follower put on, and by the means of the side levers forced down until the hops are compressed into a mass nearly as hard as wood. The frame is now removed, leaving the solid walls of the hops without protection, the edges of the sack brought together and held on the sides with wire pins till sewed, while on the ends the edges are held in position till ready to cap by means of pine-

wood pins, when, the "capping" being done, the hops are ready for market.

THE COST AND PROFIT OF RAISING HOPS, based on an estimate of a ton to the acre, 50 cents a box for picking and board, considered with the present high prices for provisions and labour, are as follows for a five-acre yard:

	d. c.
5 acres of ground, 30 dollar per acre	150 00
5 acres of hop roots, 15 dols. per acre	75 00
9,000 tamarack poles (three to the hill), delivered, 125 dols. per thousand	1,125 00
" " " for sharpening, 7 d. 50c. per m.	67 50
Agricultural implements, &c.	35 00
Hop house as described, with press, stove, hop boxes, &c.	875 00
Double-horse team, wagon, and rig	550 00
80 loads of manure, 3 dols. per load	240 00
Grubbing	15 00
Three months' work, pole-setting, vine-training, cultivation, &c. (big estimate)	125 00
Picking five tons of hops at 50 cents per box	500 00
Four box tenders for twelve days, 2 dollars per day ..	96 00
Dryer for twelve days, 5 dollars per day	60 00
Six days' baling and preparing for the market, with three men, 2 d. 50c. per day	45 00
475 days' board, 50 cents per day	237 50
Total	4,196 00

Five tons of hops, at 50 cents per lb. 5,000 00
The first season clear of all expense 804 00

There being 2,877 d. 50c. of the above cost for permanent improvement, at the same rate, the second year 3,681 d. 50c. would be cleared. The exorbitant price of 50 and 60 cents per lb. for hops, crazing the brains of the people, being so far out of proportion to the relative value of other things, even should the Eastern failures continue, by which the price is temporarily sustained, the effect it will naturally have in increasing hop-growing, in itself, will soon bring the price to its legitimate level.—*Prairie Farmer*.

THE MANAGEMENT OF GRASS-LAND.

At a meeting of the Kingscote Agricultural Association, Mr. Joun THOMPSON, Badminton, read a paper on the above subject. He said that he feared the present was not the most appropriate time for discussing the question, the high price of all kinds of grain having naturally turned attention more particularly to the cultivation of arable land. Still, he thought it a subject which must always retain sufficient importance to make it a leading topic in agricultural discussions. The grass-land within the limits of that society being so varied, he thought it would simplify the discussion if he divided it into three classes, the first comprising the rich grass farms of the Vale, the second the grass land held with farms the greater portion of which were arable, and the third the poorer description of pasture usually called sheepwalks or downland. With regard to the rich land, he believed it was not difficult to meet with considerable tracts naturally sound and sufficiently rich to enable one to go on year after year producing beef and mutton without any artificial aid, simply by consuming the whole produce on the land, and thus returning it to the soil in the excrements of cattle and sheep; but, even on that description of land, such a result could only be attained by grazing it with fattening animals. One of the prevalent mistakes in the management of grass-land was that of allowing the grass to run to seed before it was cut for hay, by which the quality of the fodder was deteriorated and the value of the aftermath much reduced. The proper time for cutting grass was indubitably when it was most fully in bloom, at which time all the functions of vegetable life were most powerful and the juices and secretions richest, never losing sight of the fact that it was better to cut too early than too late. If too early the only loss they sustained was a greater shrinking of the quantity through

the watery condition of the juices; but if too late the mischief showed itself in a twofold form, by reducing the value of the hay owing to the large increase of woody fibre, and at the same time by extracting from the soil the valuable fertilizers which should be retained for the production of aftermath. The difficulty of procuring straw or other litter was always a great disadvantage to the dairy-farmer as regarded the making and husbanding the manure in the winter, but he feared great waste was frequently allowed to take place through want of greater care being taken with it. He understood that the use of artificial manures was still the exception amongst the dairy-farmers in the Vale of Gloucester, though he stated that with imperfect information, and would be very glad to be told he was wrong if it was not so. Those manures were, however, used to a very large extent in other dairy districts, and he knew there were many instances in Cheshire and Staffordshire where they considered the use of phosphatic manures quite indispensable to the profitable management of dairy-farms. Respecting the second class of farms—the mixed, such as they found on the Cotswold Hills—Mr. Thompson made some rather caustic remarks. He said when they found sheep turned on the grass to fill their bellies, and then folded in order to empty them on the ploughed land; when they found occupiers careless about the draining of the pasture, although anxious that the arable should be made as dry as possible—one could not help feeling that the grass-land was not treated as part of the farm, but rather as a kind of auxiliary to the arable. Having made some useful observations on draining, he alluded to an interesting experiment for improving poor land, at Wall's Court Farm, when rented by Mr. Alderman Proctor, about fifteen or sixteen years ago. There was a piece of very wet, sour grass-land, considered too

had to be brought to bear good herbage by simple draining and manuring; but, by means of effectual draining in the winter, being harrowed, bushed, and dragged in the following spring, and then having a heavy dressing of artificial phosphatic manure in the summer, and further dressing, the value of the land was in a short time permanently raised from 10s. to at least £2 an acre. With regard to the third class of farms—the poorer description of pasture, usually called sheep-walks, or down-land—his experience was rather too limited to enter into the subject fully. He had, however, seen sufficient to convince him that the breaking-up of that description of land had been carried to too great an extent. The propriety of carefully cultivating even the poorer land was enforced; and, in conclusion, the speaker adverted to the national importance of his topic, as we had greater difficulty in obtaining supplies of animal food from abroad than cereals; and the large quantity of ground annually required for railways, enlargement of towns, &c., in this country, tended to diminish the land that had been used for grazing purposes.

Colonel KINGSCOTE said that he agreed with Mr. Thompson that a great many farmers did not take such pains with their grass-lands as they did with their arable; and it was penny-wise and pound-foolish their acting so. As to the soil of that part of the county, on the top of the Cotswold Hills, it was so light that it required to be given more manure than the soil in other parts, in order to render it productive. He believed bones put upon grass-land would prove beneficial, as he had seen a good result from the practice in his own park.

A lengthy and animated debate ensued, in which many of those in the room took part, the principal topics discussed being the advisability of using artificial manure.

Mr. KNIGHT admitted this manure would render the soil more productive; but he thought it might render the taste of the cheese not quite so good.

Mr. BURNETT was afraid that the system of management of their grass-lands, not only on the hills, but in a great part in the Vale, was to have no manure at all (laughter).

Mr. HUGHES thought it must be conceded that a judicious use of manure would cause grass to grow on lands where they never saw it before, so that it was a question whether manure would not alter the character of the poor land on the hills.

Mr. BURNETT ultimately moved "That it is the opinion of this meeting that much greater attention ought to be given to the management of our grass-lands, not only to improve their condition, but to keep them in the condition they are in. It is not advisable to break up even second-class pastures, and that all pasture-land ought to be manured at least once in every six years, at the rate of 50s. per acre."

Mr. THOMPSON suggested that, instead of saying any number of years or sum per acre, they should say that an equivalent of manure should be returned to the grass-land to what was taken from it.

With the alteration suggested, the resolution was adopted; and, thanks having been voted to Mr. Thompson and Mr. Holborow (who took the chair after Colonel Kingscote, on account of another engagement, had retired), the proceedings terminated.

PLANT NUTRITION.

That all plants in their growth need sustenance, and receive it from some source, is known and acknowledged by all; but how it is obtained, from whence, and how taken into their constitution, is not so plainly seen or generally understood. To offer any new ideas on this question I do not lay the least claim; my object therefore will only be to place before the reader some plain, simple, and easily understood observations on the composition of all vegetable substances, the source from which these substances are derived, and how they are taken into the organization of plants.

Vegetable, and all other substances that present themselves to our view, are divided, or may be resolved, into combustible and incombustible—organic and inorganic—matter. Organic matter consists of that in which life has at some time existed; inorganic, on the contrary, of dead matter. All plants will therefore come under the head of organized matter, as being the seat of life. All organized matter is capable of being resolved into simple or elementary substances; thus all organized vegetable matter is composed of no more than four elements that it is necessary for us to examine in our present article—viz., carbon (known to us as charcoal or the diamond), oxygen, hydrogen, and nitrogen. With the exception of carbon, these elementary bodies are known to us only in the form of gases. The properties and relations which each of these elements bears to vegetable life are important, and might with profit be examined; but suffice it for the present to say that each one performs its appropriate function in the economy of nature. Although three of these four elements are gases, yet much of the solid parts of plants is made up of them. When alone, at the ordinary temperature of the air at the surface of the earth, they form invisible kinds of air; when united in the different proportions in which they combine, they form woody fibre, starch, gum, and sugar, which, united, constitute the various vegetable forms which it is the aim of all agriculturists to raise with certainty, rapidity, and abundance. Of these elements, all plants are made up of by far the greatest proportion of carbon, the amount approaching one-half, the three others going to make up the other half. The oxygen amounts to about one-third, hydrogen to about five per cent., and the nitrogen rarely to more than $\frac{1}{4}$ per cent. of the dried weight of plants: in their green state, of course the proportions would be different. As before stated, carbon is the only element of plants that appears to us in any other form than the gaseous; but it must be evident to all that plants cannot appropriate into

their composition any solid substance, and that therefore the carbon must be absorbed in a different form or state from that in which we can see it with our eyes, or feel it with our fingers. When we burn charcoal or the diamond, which are the purest forms of carbon in nature, in the open air, they pass off, with the exception of a small residue, into the air, in the form of carbonic acid gas; in this state carbon is capable of being dissolved in water, and also of being absorbed by the plant.

Having shown that all plants are composed of the four elements, carbon, oxygen, hydrogen, and nitrogen principally, which, when united, form woody fibre, starch, gum, and sugar, which go to make up the composition of plants, we next proceed to show the source from which they are derived. All animal as well as vegetable substances are made up of the elements above named, and the soil of the earth's surface is composed in part of decayed and decaying animal and vegetable substances. The air is composed principally of a mixture of oxygen and nitrogen, with a very small per-centage of carbonic acid gas, and also is capable of being imbued with a quantity of water in a fine vapour state. Water is composed of oxygen and hydrogen, and is capable of absorbing all other gases, and of imparting them to other substances. All plants are first fixed in the soil by their roots, and rise into the air, producing their stems and leaves above the surface in the atmosphere. Necessarily, then, all plants must derive their sustenance through one or both of these mediums. Water absorbs ammonia and other gases which furnish nutrition for plants; the water descends to the soil in the form of rain, or as dew is condensed at the surface, carrying along with it the gases absorbed, imparting them to the soil, which in turn imparts them to the growing plant through its roots, either in a fluid or gaseous state; the roots prepare and transmit them to the stem, where some of the elements needed for the growth are absorbed and elaborated; the leaves also performing an important part in absorbing from the atmosphere certain gases and emitting others, acting as the breathing organs of the plant. It will then be seen that plants derive their sustenance from both the soil and atmosphere, and take into their construction, through their roots and leaves, all their nutriment. Both the soil and the atmosphere are essential to the growth of the plant, for either alone will not support vegetable life for any length of time. The soil must be stored with plant food, such as decayed animal or vegetable substances, that the combined action of the soil, water, and air may render capable of being taken

into the system of the plant; unless so stored, the plant will languish and finally die. It is the same with plant as with animal life; if either is deprived of food, a languishing condition is induced, while if it is abundantly supplied, they both thrive and grow from similar seasons.

The increase of a plant in size is supplied principally from the nutrition obtained through the medium of the soil; all its mineral elements are derived therefrom, as well as a large share of its combustible elements. If the soil is incapable of furnishing them in order to grow plants, we must add to the soil such materials as will supply the missing elements. A virgin soil possesses a quantity of nutrition from vegetable substances that have decayed on its surface in the course of time, and hence all such land is proverbial for its good crops; but after being cropped awhile it becomes exhausted, and then a supply from some other source becomes necessary, just as your own supply of provisions needs replenishing after exhaustion. These are plain, common-sense reasons, comprehended by the simplest. But the question arises in the minds of some, How does the manure act in the soil? I might answer by explaining its chemical operation, but it would be a better understood reason to answer, that it acts precisely on the same principle as does the corn in the crib fed to our fattening stock, or the provision in the store-house for our own consumption. If we provide no grain or fodder for our cattle, or have only a scant supply, and that of poor quality, we cannot expect our cattle to thrive, and neither need we expect that large crops of grass, grain, or vegetables can be produced without supplying manure to the soil from which the plants may derive food. The soil

consists of a mixture or combination of a variety of substances, some of which are essential to the growth of one kind of plant, and others to a different kind, and others are rejected as non-essential, if not poisonous; and here we see the Wisdom that directs all things, and the impossibility of our comprehending and explaining, by human reasons, certain immutable laws of nature. We place a promiscuous variety of articles of food before man, and he will select certain kinds as congenial to his nature, and reject others as injurious; this we call reason in man; the same large variety, placed before the horse or ox would result in the selection of a larger and different variety, while many are still rejected as uncongenial; this, in the brute creation, we term instinct; but what shall we term the same election in the vegetable kingdom? Watch the horse as he pulls his feed of hay through the rack, mixed with various kinds of plants, congenial or otherwise, to his nature; see him reject all that is uncongenial by the action of the lips. The same election is made, and, in a similar way, by the roots of the plant, which act in the same capacity to the plant that the lips and mouth do to the horse. There appear to be certain immutable laws which govern the growth of plants, that are far from being generally understood; why, for instance, in the growth of different kinds, one requires the presence in the soil of certain elements or compounds, while another kind demands an entirely different constitution of soil in order to a successful growth. For the present I defer the solution of these problems to older and wiser heads.—W. H. WHITE, in *Country Gentleman*.

THE CAUSES OF DISEASE.

WANT OF SHELTER FROM WIND AND WEATHER.

In a quiescent state of atmosphere the animal body raises the temperature of a portion of the air immediately surrounding it. Such an envelope of warmed air, being a bad conductor of heat, greatly retards the cooling of the animal. But winds, by constantly sweeping away this wrapper of warmer air, prove in cold or even in temperate climates more chilly than might be expected from their actual temperature. Air moving at eight miles an hour, which is only a very gentle current, abstracts heat twice as fast as when it is at rest. Air travelling at sixteen miles an hour abstracts heat three times as quickly; at twenty-four miles, four times; at thirty-two miles, five times as quickly as air at the same temperature, but when perfectly quiet. This power of the wind to lower the animal heat is well illustrated in Captain Parry's Arctic observations thus quoted by Dr. Watson, in his "Principles and Practice of Physic":—"With the thermometer at 55 degrees (a most fearful degree of cold, you will observe, 55 degrees below zero, i. e., 87 degrees below the freezing point), and no wind stirring, the hands may remain uncovered for ten minutes or a quarter of an hour without inconvenience; whilst with a fresh breeze, and the thermometer nearly as high as zero, few people can keep them exposed so long without considerable pain. And speaking in another place of the cold when the thermometer was 40 degrees below zero; 9 or 10 degrees, that is, below the point at which mercury freezes, he says: The weather being quite calm, we walked on shore for an hour without inconvenience, the sensation of cold depending much more on the degree of wind at the time, than on the absolute temperature of the atmosphere as indicated by the thermometer."—Vol. i., p. 88.

To protect animals from being rapidly robbed of their warmth, they must be suitably sheltered. Belts of plantation along exposed uplands greatly contribute to the comfort and health of grazings. Properly enclosed yards with ample shedding are requisite during inclement weather for the well-being of the animals of the farm. Without adequate shelter from wind and weather there is much waste of food and loss of condition. Not even the best of feeding will sustain the condition of cattle or horses kept on the grass-fields without shelter during the winter months; a practice still pursued throughout many of the grass counties of England, but, as it appears to us, detrimental to the stock, wasteful of food, and injurious

to the pasturages. Adequate shelter, although important for the comfort and well-being of all animals, is especially essential in the case of young animals, which lose heat rapidly, and hence withstand cold badly. In the fickle and severe winters of Great Britain, calves or yearlings living in comfortable airy houses or in well-sheltered or covered yards, not only thrive better, but are greatly less liable to disease than their fellows kept in the open pasturages, or in cold exposed yards without proper shedding or shelter. The infirmities of age, exhaustion from disease, hard labour, bad food, or any other sanitary errors, like immature years, cause the body either to part rapidly with its heat, or interfere with its power of producing heat.

Arguing from the interesting experiments of Mr. Martin on ducks and drakes, females have generally a somewhat higher temperature than males of the same species and age; their temperature, however, appears to be more variable than that of males. The power of generating heat, and hence of resisting cold, is greatest in adult, vigorous, well-fed animals, and reaches its maximum during the winter season, and when the body has gradually become used to a lower temperature.

A damp atmosphere is unfavourable to vigorous health; it prevents transpiration through the skin, and thus hinders the prompt removal of deleterious waste products. Wet, when conjoined with cold, is especially injurious. Doubly dangerous does the wet also become when it remains for a lengthened period in immediate contact with the body, as when animals are compelled to lie on a wet bed, or are covered with wet clothing. The skin is thus chilled, and its important depurative functions are interfered with: colds settling in various parts; rheumatism, in some of its hydra forms, stiffening the joints, limbs, or body, are thus produced in all animals. Grease, cracked heels, and thrush are with difficulty kept out of damp stables. On undrained pastures young cattle suffer from bronchial flarise; are usually, besides, indifferently nourished, and are hence often attacked by diarrhoea, black-leg, and red-water. On undrained lands abortion usually abounds amongst cows and ewes. On such lands sheep, like cattle, are liable to be infested with flarise, which excite irritation of the lungs, and also of the bowels. They often pine from flukes in the liver, developing the once familiar liver-rot; whilst, from the imperfect wear and tear of the soft, rapidly-

growing horn, foot-rot is frequently produced. Even pigs, hardy and accustomed to mud although they be, degenerate in damp localities, and become rheumatic and scrofulous.

To prevent the depressed vitality and various diseases incident to animals living on wet lands, thorough drainage must be insisted on. Not only does drained land become drier, but its temperature is also raised, owing to the superabundant rainfall speedily percolating through the soil, instead of, as formerly, slowly evaporating, and thus cooling down with the ground itself, and hence likewise the air overhanging it. On land deeply and effectually drained a more palatable, digestible nutritious, and abundant herbage speedily supersedes the coarse, hard, benty, and often sparing produce. By extended drainage operations our British climate has, even within the present century, become more temperate and healthful, alike for man and beast; the atmosphere is drier and freer from mists and miasmata. These salutary changes have been especially notable throughout the fen counties of England, but are well recognised even in the Lothians. Agues and fevers in man have been greatly abated; whilst, from the drying alike of soil and air, rheumatism, black-leg, red-water, and other such ailments amongst

the lower animals, have become less common than formerly. Although in an economical as well as a sanitary point of view, drainage has thus accomplished much, there is yet in many parts of the country abundant scope for its further extension.

But in the homestead, as in the field, superfluous water requires to be promptly got rid of. Farm-buildings should always be placed so that they can be thoroughly drained. A few feet from all dwellings, whether of men or beasts, a substantial drain should pass, whilst in a rainy climate like ours, the preservation of the buildings, no less than the comfort and health of the inmates, demand that proper spouting should be provided. In small stables where a good fall is secured, surface drainage will usually suffice to take the wet readily away to the manure-heap, yard, or tank, provided for its reception in a convenient situation twelve or fifteen feet from the stable. In the better class of stables gratings will be provided underneath or behind each horse, sink-traps, and glazed Staffordshire pipes beneath the flooring will convey away the fluid discharges and prevent the return of unpleasant odours.—*North British Agriculturist*.

THE MANURIAL VALUE OF SOOT.

A correspondent has had, through our agency, a sample of soot analyzed for him, and finds that it contains 2.45 per cent. of ammonia, and has a money value (according to analysis) of £1 10s. per ton. The circumstance leads us to make a few remarks upon the fertilizing value of this substance, which may prove interesting to our readers.

Soot is one of the products of the imperfect combustion of carbonaceous substances used as sources of artificial light and heat. It consists essentially of carbon and charcoal, in a state of minute division; but it also includes a great variety of substances, such as sulphate of ammonia, sulphite of ammonia, sal ammoniac, sulphate of lime, common salt, fuliginic acid, earthy salts, and several complex organic bodies. In some (thoroughly dried) samples the amount of charcoal is found to be 98 per cent., in others only 80. This great variety depends upon the nature of the substances from which the samples are derived. It therefore, frequently happens that the fertilizing value of this article is almost nil, whilst in other cases, as in the one quoted, it is very high. The soot derived from the imperfect combustion of coke, wood charcoal, anthracite, culm, or Kilkeny (blind) coal is, generally speaking, perfectly worthless for manurial purposes; on the other hand, Newcastle coal yields a very valuable kind of soot, and a still better variety is obtained from the Scotch cannel or candle coal. As the latter is, owing to its large per-centage of bitumen, more or less employed in the manufacture of illuminating gas, the agriculturist who uses soot may be pretty sure that all he may obtain from a gas-works is of good quality. Wood and turf yield soot of a very low specific gravity or density, but, as a rule, of tolerable manurial power. There is usually a large proportion of fuliginic and other acids of vegetable origin in wood and turf soot, and it is safer to use it in a compost form.

Although carbon constitutes nearly the whole weight of soot, this ingredient possesses little, if any, manurial value. The alkaline and earthy salts in soot are, so far as they go, useful; but in very few samples of soot do they increase the value of the article, by even so much as 1s. 6d. per ton. The only really useful constituent of soot is ammonia. When coal or wood containing nitrogen is burned or charred, the nitrogen unites with the hydrogen (which is always present when nitrogen is an ingredient of the fuel), and forms the gas termed ammonia. Soot, like other varieties of charcoal, possesses remarkable absorbent power over gases, and, therefore, retains in its pores a portion of the ammonia which escapes from the burning fuel. Sulphur is a usual ingredient of coal, and during the combustion of it, it unites with the atmospheric oxygen and forms sulphurous acid, which being volatile, flies off in union with some, perhaps all, the ammonia, forming the sulphite of that alkali. A very large proportion, sometimes

indeed the whole, of the ammonia contained in soot exists in the form of sulphite; but it is also very often in union with various organic and semi-organic acids developed during the combustion of the fuel. The proportion of ammonia in soot varies from 0.5 to 7 per cent., but the average (from coal) is about 3 per cent.

Soot is applied to almost every kind of crop, but is most commonly employed as a top-dressing for grass land. When used for this purpose in spring it is said to impart a disagreeable flavour to the butter of the cows fed upon the grass manured by it. However, our own experience does not verify this assertion. It has been used as a top-dressing for wheat with excellent results; and applied to potatoes it is found to materially promote the growth of that crop. Where soot can be obtained cheaply and of good quality it might be used as a very economic substitute for Peruvian guano or sulphate of ammonia, in admixture with superphosphate of lime. Such a compound would be well adapted for root crops, more especially in the case of stiff clays.

The quality of soot may be roughly estimated by mixing an ounce of it with an equal quantity of recently slaked and well-moistened quick-lime; the more pungent the odour the larger will be the proportion of ammonia, and the more valuable will be the soot.—*Irish Farmers' Gazette*.

PENNYROYAL FOR FLEAS.—A Georgia correspondent of the *Scientific American* gives his experience with these pests. He says: "Much the largest number of these insects are brought into our family-circles by pet dogs and cats, and the pig-sty is generally filled with them at this season of the year, where numbers will hop on to you when visiting it for the purpose of feeding or inspection. The oil of pennyroyal will drive these insects off; but a cheaper method, where the herb flourishes, is to throw your dogs and cats into a decoction of it once-a-week. Mow the herb, and scatter it in the beds of the pigs once-a-month. I have seen this done for many years in succession. Where the herb cannot be got, the oil may be procured. In this case, saturate strings with it, and tie them around the necks of dogs and cats; pour a little on the back and about the ears of hogs, which you can do while they are feeding, without touching them. By repeating these applications every twelve or fifteen days, the fleas will fly from your quadrupeds, to their relief and improvement, and your relief and comfort in the house. Strings saturated with the oil of pennyroyal, and tied around the neck and tail of horses, will drive off lice; the strings should be saturated once-a-day."

THE BREEDING AND FEEDING OF STOCK.

At the monthly meeting of the Swindon Chamber of Agriculture, Mr. Reynolds read a paper "On the Breeding and Feeding of Stock," in which he said: It was with difficulty that I could bring myself to address you upon a subject which I apprehend is better understood by many gentlemen present than by myself; but having been much pressed by your excellent vice-president and by your indefatigable honorary secretary, and also being told that no other person was prepared, rather than permit the appointed day to pass without a discourse, I have resolved to offer you a few observations upon a subject in which most of you are interested. In an institution of this character, just wearing itself into working order, there is generally a prevailing unwillingness on the part of its members to take an active or prominent part in its proceedings; and I am, therefore, the more persuaded that you will criticize my remarks and opinions in a friendly spirit. In treating my subject—that of the "Breeding and Feeding of Cattle"—in which I must necessarily touch somewhat upon the treatment of the dairy-stock as connected with both the other subjects, I shall not rely upon my own observations and experiences, but shall only bring before you the opinions of eminent men, and the results of experiments arrived at with great labour, careful comparison, and intelligent deduction—information which although not new to some may be to others, and in the case of most of you may lead to reflection. The day is now past when men could look with disdain upon the teachings of scientific investigations; and farmers are cautiously, but surely, adopting conclusions drawn therefrom. It is now a little more than a quarter of a century since the law was repealed by which the importation of foreign cattle was prohibited: before then no live cattle could be brought in, except occasionally by an order in Council. Before that time the price of meat, except in wartime, ruled lower than it has under free-importation, and the cause is easily found. After many years of repose the nations of Europe (and, indeed, of the world, for in matters of trade Europe and America lead the world) the people had applied themselves more to productive industry and the creation of wealth; and England, by a very opportune adoption of the principles of free-trade, took the foremost lead, and secured abundant employment for her active operatives in the factory and in the workshop, in the mine and at the forge, at wages before unknown; thus they did not toil for bread alone, but had the means of eating largely of animal food—a fact I am sure you recognize with pleasure, for a country is never so safe as when the labourer is well-fed and happy. I told you before that when we imported no foreign beasts the demand was not sufficient to cause a high price for meat. Let me call your attention to the increased consumption, as shown by extracts from the *Mark Lane Express*, of the supply of foreign stock to the London market within the last few weeks:

	Beasts.	Sheep.	Calves.	Figs.	Total.
Dec. 16th ...	1,053	7,843	267	263	9,426
Dec. 23rd ...	1,480	5,828	269	42	7,619
Dec. 30th ...	167	2,960	72	44	3,263
Jan. 6th ...	511	6,153	264	188	7,116

In the week ending Dec. 16th, 1865, the import was enormous, being—

2,094	15,036	714	793	18,637
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At this period, in spite of large imports, the price was high. Notwithstanding the depression caused by the commercial panic of 1866 and 1867, the fretful state of the world at this moment, and the clouds that dim our trading atmosphere, we have in our position—in our money resources—the ability of our merchants and manufacturers, and the skill and industry of our artisans, the capacity not only for maintaining, but even extending our trade, so as to give to labour the means of consuming largely of meat. If these views be accepted, the attention of farmers will be more directed to this subject, and more attention will be paid to the breeding and feeding of cattle. When I allude to the breeding, it is not with the idea of recommending any particular kind of cattle for particular lands or districts; not that that is a matter to be overlooked—far otherwise, but my wish is to recommend you as far as possible

to work in harmony with the laws of physiology. I am aware that upon this important point of my case I am likely to provoke opposition; but as it is from the ventilation of such questions, and by bringing the observations and experiences of practical men to their elucidations, that a correct judgment may be arrived at, I will put aside all diffidence which might naturally arise in my mind in discussing the question, and submit myself to your friendly criticism. It will here be interesting to go back to some point at which our several breeds were derived from some common ancestry, and, as far as we are able, to trace the circumstances by which the many differences of breed and quality have been arrived at. Cattle are now found in a wild state in Chillingham Park, Northumberland; Wollaton, Notts; and at Ribblesdale, Yorkshire. They are the remains of the native cattle which once roamed over the northern provinces of England and the southern parts of Scotland, and some of which found their way to the mountains of Wales. These cattle are somewhat tamed by the want of food in severe weather, and will then allow any one to come among them; but when well fed, they are very fierce at the approach of man, and the herd, turning their heads in a menacing way, will snort and gallop round him, at each circle coming nearer and nearer, until it is necessary to leave them. The mode of destroying them is the only modern remains of ancient hunting; the inhabitants go in numbers, both on horse and on foot, and having driven a bull from the herd, the horsemen dismount and shoot him. Should they only wound him his ferocity is fearful, and great is the danger of being near. This sport has lately been almost abandoned, and the rifle quietly does the work. Youatt tells us that when the cows calve they hide their young ones for a week or ten days in some sequestered situation, suckling them two or three times a day. If any person comes near the calves, they press their heads close to the ground and lie like a hare. A gentleman, who had found a hidden calf very lean and very weak, began stroking its head; it got up, pawed two or three times like an old bull, bellowed loudly, retired a few steps, and then butted at his legs with all its force. The dams will allow no persons to touch their calves without attacking them with ferocity. The question has been raised, and much discussed, as to whether the wild cattle which I have described have been progenitors of the various breeds of this country, some of which I will mention presently. The whole matter is wrapped in mystery, and having no reliable record of any other aboriginal beasts, I think we are justified in concluding that from the wild cattle of Chillingham and Ribblesdale have descended all that variety of breeds, with their distinctive and sometimes almost opposite characteristics of form and habits which distinguish them. We cannot contemplate this without recognising two important facts. First, the infinite wisdom of the Divine Being in adapting organised beings to the state in which they are placed; and secondly, the operation of circumstances in effecting change in the conformation and characteristics of a species. A celebrated writer tells us of this, and instances the fact that in cold countries whiteness prevails as a colour, and fur or wool as a coat; in warmer climates brown prevails as a colour, and hair as a covering; while in those absolutely hot, the dun seems to prevail as a colour, and down as a clothing. And it is possible that the influence of a pasture may lengthen or shorten the horns. No doubt many modifications from time to time have been effected by careful selection on the part of the breeder, which, assisted by a variety of foods and climates, have eventuated in the establishment of recognised breeds. The writer I have before quoted says: "In all our stock of domesticated animals we see profuse and infinite variety; and, in the races of wild animals from which they originally descended, we find a uniform colour and figure for the most part to prevail. Domestication is to animals what cultivation is to vegetables; and the former differs from the natural state of the one class of beings in the same circumstances which distinguish the latter from the natural condition of the other class. The most apparent of these is the abundant supply of the peculiar stimuli of each kind.

Animals in a wild state procure but a simple and unvaried food, in precarious and deficient quantities, and are exposed to the inclemencies of the seasons. Their young are produced in similar circumstances to the state of seedlings which spring uncultivated in a poor soil; but, in the improved state, all the stimuli of various food, of warmth, &c., are afforded in abundance; and the consequence is, a luxuriant growth and evolution of varieties, and the exhibition of all the perfections of which each species is capable." It would be difficult to find any language more expressive of the subject than that which I have just quoted: it gives us a very clear idea of the wonderful adaptability of organised beings for change of circumstances and climate, and of the means by which great changes have been carried out, and the animals produced suitable to all the varieties of pasture and climate from Devonshire to the Orkneys. The placid-looking Devon, with its bright red coat; the big Sussex, with its wide loins and hips, and round carcass, and square hind-quarters; the Hereford, with its well-placed shoulders, large rumps, wide pins, mellow skin, and kind fattening properties; the fashionable shorthorn, embracing in such a high degree both milking and grazing qualities; the Glamorgan, with its light carcass; the polled Scot, and the little Kyle—are of one common descent, and, in their various capabilities and conformations, are but so many representations of differing conditions of food and climate. Here, then, is a wide and interesting field for the breeder of cattle. Shall we say that these wonderful changes and benefits have been accomplished, and that the goal of improvement has been reached? I am sure you will adopt no such narrow conclusions, but that you will still push onwards, and, by a more enlightened selection, more liberal feeding, and, above all, by attending well to the comfort of your cattle, will, year by year, produce more food for the country, and more profits for yourselves. This now leads me to the consideration of the breeding of cattle. In treating of this subject, I have to notice the different periods of the year at which the heifer is put to the bull, so as to bring her calf at the season which best suits the owner in reference to his particular views and purpose. Some obtain their calves in the summer, or early autumn, so as to bring the greatest results within the rules and regulations of our great agricultural societies; others at a later period in the autumn, because they have seen that, by rich feeding during the winter months, they have a lot of good strong calves to turn out in the spring; but, in the desire to eclipse their competitors, they overlook, in too many instances, the expensive food which both dam and offspring have been consuming: fortunately for the nation, by far the greater number adhere to that period which accords better with the suggestions of nature. Nothing can be clearer to a thinking mind than the fact that the young of all animals require warmth, light, and air for their full and perfect development; therefore, if the calf is dropped just before winter, he has to be kept for several months before he can enjoy the invigorating air and refreshing sunshine of spring, and the free use and exercise of his limbs, all of which are so essentially necessary for growth and health. The two former systems are mostly adopted by persons breeding for exhibition; and, although by stimulating the dam to an extraordinary secretion of milk for a time, and by feeding the calf with rich food, individuals may be reared of great size, perfect symmetry, and good quality; yet such a system must, if it become general, quickly deteriorate our breed and lessen our stock. This, like the excessive fattening of beasts, may serve to indicate the capacities of particular breeds or herds, but, if generally followed, would, in my opinion, be disastrous to our stock. I can only think it desirable where the object is to prove some end. The calf shut up for the winter months would be like a hot-house plant, with constitution pampered by unnatural treatment, at a period when the foundation of a good constitution should be laid. Need we wonder that we so often hear of our best herds becoming sterile, or being given to cast their calves, or at all the other evils which have sprung up lately since such practices have prevailed? rather would it not be a wonder were it not so? I will not dwell longer upon this part of my subject, but proceed to that part of it which more immediately interests this neighbourhood—that is, to treat of the breeding as carried on here, which, I presume, is by bringing the cows to calve between the middle of February and the end of March—a season which, considered in reference to the health of the stock and the convenience of the farmer, seems to me a very judicious com-

promise. To bring this about, the bull must be put to the cow in May and June, when, having for some weeks been living on grass or other succulent food, the reproductive powers of the animals are in a healthy state. Professor Tanner says, "A dry dietary is unfavourable for breeding animals, and very much retards successful impregnation." Dr. Hitchman, in writing to my friend Mr. Duckham, the intelligent author of the "Hereford Herd Book," says: "I stand pledged to your first aphorism. The more the natural laws are studied and aided by science, the greater will be the success. The early part of March is the time in which it is best to have the calf drop. I believe in high-bred stock to be the result of many errors, all of which, however, are summed up in the words, 'too much stimulating food, too little exercise, too much warmth, and too great a disregard to the milking functions, with all that it entails.'" We now suppose the proper time arrived for putting the bull to the herd, and the farmer, anxious to improve his stock, either in milking or feeding properties, notices defects in the frame and points of his stock; he is anxious to correct it as rapidly as possible, and for that purpose chooses his bull. But here I recommend caution, for Nature is opposed to sudden changes; and frequently where cattle very opposite in frame or constitutional habit are brought together, the result, instead of being a modification of the two, is often the production of a mongrel and ill-shapen race. To effect a safe and profitable change continued care is required in selecting, and is much better and safer than great opposites. I have now to allude to a practice which has prevailed for the last forty years; at first only in a few instances, but latterly very extensively—that is, the putting the heifer to the bull at fifteen or sixteen months old. It seems to recommend itself on the score of economy, as saving a year's keep of the heifer, and bringing her cheaper to the pail; but I think, if it is looked at calmly and earnestly in all its consequences, it is far from economical, and to it may be traced much deterioration of constitutional power, and consequent liability to disease in our herds. By breeding so young you tax nature so heavily, and you work a double evil, namely, you stunt the growth of the mother, and the progeny is puny and weak. Again quoting Dr. Hitchman, at "that early age nature is busily employed in adding to the growth, size, and completion of every muscle, bone, and viscera of the animal; every particle that goes to the building-up of the animal system is furnished from the blood of that animal; that the blood is furnished with these materials solely and exclusively from the food that is taken into the stomach, and digested by that organ, and the air which is inhaled by the lungs; that no more muscles (flesh), bones, skin, lung, heart, liver, can possibly be found in the system of any animal that can be extracted by its digestive and other organs from the food by which it is supplied." In the case of a young heifer all these organs are taxed to the utmost to supply the growth of her own frame, and it is when such a demand is made for her own subsistence and growth that not only is there a new set of organs and functions called into action, but an already-active circulation is called into exercise, and a feverish state produced. Again, to use Dr. Hitchman's words, "you call another like creature into existence, having like structures to be built up with those which the animal was building up in its own body; but while you do this you cannot add a mite to the digestive and assimilating powers of the animal. You have no more material to supply the two bodies than you had for the one." Extra food does not meet the case; the power of assimilation is overtaxed. I have little hesitation in saying that in this violation of physiological laws many diseases among our herds owe their origin. Probably you may tell me of many cases where the practice has answered; but I am firmly of opinion that where long carried on, a great many of the cows become early barren, and that neither they nor their progeny as a rule attain to much size, or are famous for milking. To bring them in early, it is necessary that they should be kept well, as when we take into account that they are generally dried early the first year, are very liable to go out of season, and that as a rule they seldom attain so great a value for the butcher, I can not help thinking that the economy is nil and the deterioration of quality certain. Of the treatment of cattle during the time they are in calf I will not presume to say much, as you are all well acquainted with that; but allow me to suggest that it is desirable they should be kept quiet; not only should dogs or horses be kept from hunting them about, but if there is

one or two in the herd that hunt and worry their fellows they should be removed. It is particularly to be noticed that should either of them cast a calf, all signs of it should be quickly put out of the way and the cow removed, for the restlessness occasioned by it frequently has a sympathetic effect on the others. After calving, I think it is very prudent to keep the cow with the calf for a few days; it has a soothing effect on the mother while the fever occasioned by parturition passes away, and the licking of the calf has a medicinal effect in aid of it. I will now proceed to the consideration of food. This, chemistry has taught us, divides itself into three classes—viz., 1st, nitrogenous or flesh-forming matters; 2nd, saccharine and oily matters, for respiration and to form fat; 3rd, mineral matters, for producing bone. The materials required for producing bone are the most abundant, and are present in all kinds of vegetable produce, and therefore we need not stop to enquire about these; but as the nitrogenous or flesh-forming matters and the non-nitrogenous or saccharine and fatty matters exist in different degrees in different kinds of food, and there is seldom any food without both, it becomes an important matter in connexion with the keeping of stock, or the making of meat, to ascertain as nearly as we can the proportions of such in the food we are using. I will, at the risk of being tedious, introduce a table showing the composition of various kinds of food in reference to their properties, which I have taken from a very valuable little work published by Messrs. H. and J. Procter, of Bristol, in 1862, upon the value of foods. I believe it was published only for circulation among their friends, but it would be a great benefit to the public if it had a free circulation:

	Heat or fat-producing materials in each 100lbs.	Flesh-forming materials in each 100lbs.
Rice ...	75	34
Wheat ...	68	14½
Indian Corn ...	65	8½
Barley ...	61½	13½
Oats ...	56	13
Peas ...	55½	13½
Beans ...	50	23½
Lentils ...	48½	23½
Linseeds ...	39	26
Linseed cake (English) 13½	31	25
" (Foreign) 10½	13½	28

With the exception of wheat, which is the food of man, the table shows an increase of flesh-forming matter as the heat and fat-giving properties diminish. The study of this cannot fail to be profitable, enabling the grazier to employ the produce of his own farm, particularly straw, possessing a large quantity of respiratory and fattening matter, with those foods which, on the other hand, partake largely of flesh-forming materials.

Wheat-straw possesses water ...	14.23
Flesh-forming matter ...	1.79
Respiratory and fatty matter ...	31.36
Woody fibre ...	45.15
Mineral matters ...	7.47
	100.00

It will be seen by this that straw possesses considerable nutritious matter; but inasmuch as its flesh-forming matter is so very small compared with the respiratory and fattening matters, it is ill adapted as a food to be used by itself, because in it the nitrogenous and respiratory elements are not in proper proportions: whichever is in excess over this proportion will be lost, on account of the animal consuming food sufficient to supply the deficiency of the other element; and unless straw is mixed with richer and more soluble foods, its fibre is so hard, and in large quantities so indigestible, that it passes through the animal without doing much good; but I am of opinion that used with discretion, cut up with hay, and mixed with cake or meal, it is valuable, and that in it we have a resource for rearing and maintaining a largely increased stock. Reverting again to Messrs. Procter's book, I will not tire you by quoting in minute the several experiments there related, but rather state results as given by many eminent agriculturists who have well studied and worked out the subject of the relative values of different kinds of food, and among them is a gentleman well known to you, and I am sure with you will his name be a guarantee for their accuracy—I allude to our

neighbour, Mr. Moore, of Coleshill. Among those experiments it is proved that it requires 150 lbs. of turnips to make a pound of meat in the field, but that when the sheep have been fed in the fold with the advantage of shelter and plenty of straw bedding, 100 lbs. have made the same quantity of meat. There are also experiments related based on the data derived from the results of turnip feeding, which show the effect of using beans, peas, and oil-cake with them. It takes 8 lbs. of beans or peas to make a pound of meat, and of linseed-cake from 5 lbs. to 7 lbs., barley 6 lbs. As cake is a manufactured article this must depend on its quality. As we are not acquainted with the chemistry of the animal's stomach, we cannot rely alone upon strict chemical analysis which is proved by one of the experiments related, for we find that although it took 8 lbs. of beans or peas, or 6 lbs. of linseed-cake, to make a pound of flesh, yet with peas and oil-cake mixed 4½ lbs. did it. In another experiment ½ lb. of linseed and 3½ lbs. beans produced a pound of flesh. These are striking illustrations of the advantages of judiciously mixing the different kinds of food, and they show the desirability of frequently testing them practically. As hay is of immense importance in the consideration of this question, it may be well to mention that it is estimated that 13 lbs. of good hay will produce a pound of flesh. I think that a very fair calculation would be that 112 lbs. will make a stone of meat, which at 6d. per lb. gives us 4s. per cwt. for hay and attendance. In these statements it is not pretended that the results will be attained in all cases, or under any kind of management, but they may be expected on an average. I will now return to the stock, at the point where we broke off, viz., where the heifer had calved, and offer a few remarks on feeding. To feed the calf for the butcher nothing is better than to keep it entirely upon milk, and in a dark warm place free from excitement, but in rearing for stock the calf should be kept with the cow if practicable for three or four days, until the mother is quiet, or is in such a state as not to suffer from the excitement occasioned by being parted from her young. Now, it is not so much a question of not knowing how to feed the calf, as not being able to resist the temptation of turning, as it is weakly supposed, the milk to better account. At this point I should urge you not to stint the calf too soon, because you are checking his thriving powers at a period when a little extra would keep him going; and the evil will be manifest further on in his existence, when it will cost much more to cure it (if it ever can be cured) than was saved at first. I should recommend the keeping them with milk until the functions are fairly started, and then skim milk and meal or hay-tea and meal until strong enough to feed. Undoubtedly the best mode would be to feed the dam well, and let her keep her calf; but in a dairy district this would be impracticable. Whatever is the mode adopted, too much care cannot be taken to prevent the frequent interruptions to the growth and maturing of the animal, and which further on in his existence is occasioned by the differences of seasons. We bear in mind here that a very large proportion are now gone from the dairy to form part of the stock of corn-farms. My remark is equally applicable in both cases. If food be abundant, then the stock thrives; but if scarce, they have less of it, and get out of condition until a better time arrives. This is a very short-sighted policy, because all the food that you have been giving young beasts without improving them, is so much wasted; and the loss does not end there, for it has induced an unhealthy habit in the animal, which requires time and generous treatment to remove. With our dairy stock this kind of makeshift management has too extensively prevailed. However short the grass may be in the summer, the cow has had to live on it alone; and then perhaps, in winter, when large in calf, and needing additional keep, she has been sent to the strawyard until within a month or six weeks of calving. Having lost flesh during the winter, the best portion of the milking season is lost before she is in condition. Then it is too late to increase her milk materially: it is getting too old. As a consequence, the farmer complains that it is a "bad make this year." I hope this does not prevail so much as it did formerly; for I believe that, in my experience, I have seen beasts which, before they had been three years old, have been kept at least six months at different times without making progress, thus losing more than sixteen per cent. of the food. I hope you will not think me presumptuous when I say that, if proper attention was paid to keeping the stock in general good condition, by supplementing the

ordinary keep, when necessary, with meal or cake or grains, or other food, and attending to the comfort of the animals, your beasts would obtain more size, would be freer from disease, and that you might boast of a make of cheese and butter much beyond your present expectations. There are few of you who would not be glad to take a field or two more on to your farms, and yet who might not produce greater results than you do from your present holdings, if you would only adopt a more enlightened and liberal mode of management. I would suggest that, whilst milking, every object of terror should be kept from them, as they will not give down their milk freely whilst under the influence of fear; and if this were allowed to happen often, it would have a permanent effect on their milking qualities. This proves the necessity of quiet treatment. In the early part of my address I advised the bringing in the heifer at three years old, by which time she will have reached far on towards maturity; but there is little doubt that if kept well she will grow until nearly five years old, and after being in the dairy for three summers will, if dried in the early part of August, be in such condition as to require but little addition to her natural food for making her fit for the butcher. We will say a few words on stall or fold feeding, and then conclude. There is a great variety of opinions as to which is best. Some maintain that the animal does best in a warm well-littered yard with perfect liberty of limbs; others assert that the motion interferes with his repose, and wastes the tissue; while others again advocate the pit system. I am rather inclined to think that when the animal is to be several months in the yard it would be desirable to bring him in by degrees. At first the confinement of the yard would be sufficiently irksome and annoying; when well accustomed to this he may be put in the stall, but care should be taken to give him plenty of room and keep him clean, and whilst airy enough to keep him sweet it should not be so cold as to make an unnecessary demand upon the food intended to fatten him, for much of the same food which goes to supply heat also makes fat. I cannot look upon the pit system as calculated for anything but finishing off.

Differences of opinion prevail as to the mode in which roots should be given to animals. My opinion is, that if you are giving a large quantity of straw chaff, it is best the roots should be pulped, because the juices of the root mixing with the straw for some hours before use makes it more soluble; but if given with meal or cake I should prefer them cut with an ordinary turnip-cutter—it goes cleaner over the palate of the animal and is nice to mouth. It is likewise desirable occasionally to change the mode of giving the food, of course taking care not to lower the quantity or quality, sometimes giving the cake alone and at others turnips alone, so as to make a little change to prevent the stomach palling—a little variety makes the animal feel cheerfully. A friend of mine near Ross is in the habit of giving his stall beasts a bran mash occasionally, in the same way that he would his hunter, and he told me that he thought it had a good effect. There is one thing of which I am perfectly satisfied, and that is, that if they were all rubbed and groomed frequently in the same way as you would have your hunter served, it would have a good effect on the animals. The cow's skin is very thick, and the effect of their food is largely increased respiratory action, and the animal frequently rubbing itself: we are told of obstructions in the skin caused by congested fatty matter seeking to escape, which is kept back by external filth or cold. I am inclined to think that many of our cases of pleuro-pneumonia might never have occurred if this simple preventive had been adopted.—Supply of Water: I have not attempted to treat this subject in detail, as it would have taken too much of your time, and I should only have been talking to you of matters which you understand fully as well as myself; but I have offered opinions upon points which I hope are worthy of your consideration, and if it has the effect of inducing a discussion, leading to useful reflection, my object in addressing you has been attained. It is a large subject, and one which will require your attention as well as any that I can think of.

Mr. Reynolds' address gave rise to a discussion, in which the Rev. H. G. Bailey, Mr. T. Chandler, and others took part.

PRACTICAL AND POLITICAL AGRICULTURE.

At a Meeting of the Melplash Agricultural Society assembled at Beaminstor, Mr. R. Darnley, of Dorchester, spoke to "The Progress of Agriculture—Practical and Political." Mr. W. Pope was called to the chair.

Mr. Darnley said that he was aware that he had introduced a subject which extended over a great number of years. He would not go back to agriculture from its commencement, as he was not an antiquarian nor a geologist. He intended merely to touch upon agriculture of the modern past and explain something about the agriculture of the present. They must all admit that their forefathers had much greater difficulty in cultivating the soil than they had. Their ancestors lived in times by no means favourable to agriculture, when they frequently had to leave their ploughs for the battle-axe to defend these shores. The entrenchments throughout the whole of the neighbourhood testified to the difficulties with which they had to contend. The farmers of the present day ought to congratulate themselves upon living in such peaceful times, when they could follow their occupation without let or hindrance, and, he hoped, in prosperity. Scarcely anything was written upon agriculture until the 14th or 15th century, and at that time the population of the United Kingdom was exceedingly small. England and Wales during the 14th century contained only a population of three millions. Three-fourths of these were engaged in agriculture, and only one-fourth lived in towns. Now, a great change had come over the habits of the people. The population had increased 1,000 per cent.; now three-fourths of the population lived in towns. The population of Dorset was only 180,000, whereas that of Glasgow alone was double that number. Although agriculture had made great progress, its population had not increased. It had been stated that the agricultural population of the country was at one time greater than at present. Cobbett mentioned several instances in corroboration of that statement. Almost every hill in that district bore the mark of the plough,

They found also marks of enclosures in every direction. The valleys were then mere bogs. The parish churches would accommodate many more than was now required, and that was a proof that the population in the agricultural districts had decreased. It had often struck him, when commanding a view of a valley from one of those hills, the labour that must have been expended in cutting those ditches which was the only system of draining the land then known. Underground drainage had not at that period been thought of. There must have been the greatest possible difficulty in restoring fertility to the soil after once being broken up and cultivated for some time. No turnips were grown, and there were no means of restoring fertility. When the turnip was introduced, agriculture began to progress. The first Swede turnips were grown in 1801 or 1802. Mr. Dixon wrote a work in 1804 upon agriculture, and stated that he knew a person who had grown two acres of turnips. That was considered an enormous crop for a farmer. If they traced the cultivation of roots from their introduction to the present time they would find that they had increased something extraordinary. He considered that the cultivation of roots was the great lever of agricultural progress. No one could restore the fertility of the land except by the cultivation of roots. They had at the present time far greater advantages than those possessed by their forefathers. He was not going to talk shop, but they knew that turnips—which might be produced for two or three years without assistance—could not be permanently produced without artificial manure. Without manure they would find their turnips similar to primroses—with nothing under them. In Norfolk and in some parts of Dorset it was simply an impossibility to grow turnips without artificial manure. The quantity of oilcake consumed was also enormous. It was a fact that in some localities more was paid for artificial manure and oilcake than for rent, and in that way they had gone on for years. He had been in the habit of receiving hundreds a year from the hill

farmers for oilcake and manures. Without that outlay they knew it would be impossible to cultivate their farms. What had been the effect of growing those roots? They had produced beef and mutton to feed the people of England. Without flattery he might say that they had made as great progress in the produce of meat as in any other part of the country. It was the duty of every agriculturist to make progress, particularly when the land at his disposal and the population he had to feed were taken into consideration. That district could boast of some of the finest Devon beasts, Dorset sheep, and turnips. They had made the greatest possible progress, and he hoped they would continue to do so. Dorset might well be proud, looking at the agricultural returns issued by the Government last year. It had done its duty well as regards agricultural progress. He found from those returns that 123 sheep were kept upon every 100 acres of land in the county—which were 18 sheep more per 100 acres than any other county. Whereas the whole county averaged 68 sheep per 100 acres, in the county of Dorset the average was almost double. He was aware that the Government returns were not perfect, as many were scrupulous in giving information. But he believed that the numbers given approximated to the real number produced. They must not forget that the manufacturers had not only been customers for their beef and mutton, but had provided them with machinery with which to gather in their crops. If machinery had not been introduced, they would be unable to thrash their corn. The man who now managed their machines were too proud to use the flail. They could not now get men to use it. The labourer would consider himself degraded if asked to thrash with the flail. If manufacturers had not produced such excellent machines, agriculture could not have progressed to such an extent. They were told that the production of English corn was hardly worthy of the notice of the people of England. A greater fallacy never existed. He believed that it would be the greatest possible misfortune to this country if the producing of corn were abandoned. They were told by the London press to produce meat instead of corn. How could a man, sitting at his desk in London, give advice to practical farmers as to the best way in which to manage their farms? An article in the *Morning Post* a few days since suggested that farmers should produce and export meat, instead of turning their attention to corn, which could be imported by foreigners cheaper than it could be grown here. This was an absurdity. If they produced more than they required—even a few thousand sheep—the prices fell 1½d. and 2d. per lb. Possibly what would be a profit at the prices they intended to sell would thus be converted into a loss. If meat were produced at 8d. per lb. instead of 6d., the consumption would be checked. We were now importing animals, and it was just as absurd to suppose we could export meat at a profit as to say that we could export corn. The editors of the London papers recommended it, but they knew nothing about agriculture. The editors of the papers in the agricultural districts did not follow their example, because they knew better. In the event of war, what would be the consequence if they were dependent upon the foreigner for the production of corn? It was said to be impossible now to get war. People were too enlightened. Yet the world appeared to be much disturbed. Every preparation was made for war. They could not say how soon it would come; but come, sooner or later, it must. To be capable of feeding our own people seemed to him to be one of the most desirable of objects. He wished to congratulate them upon the increase in the value of land—something like 100 per cent.—within the last century. Perhaps that was of greatest advantage to the landowner. But as the population increased the land would become still more valuable. He must congratulate them, as agriculturists, upon having risen in the social scale. He was a sort of half commercial man, and had on more than one occasion been obliged to take up the cudgels for them. They employed their time and talents in the cultivation of the soil, and were deserving of that rise in the social scale, which, he was happy to say, they now enjoyed. In that view the agricultural labourer, in his opinion, had participated in a greater or less degree. All classes had moved upwards, and the agricultural labourer had certainly made progress. He was better fed, better clothed, and better housed than when he (the speaker) was a boy. Work was now more plentiful, and the labourer was more deserving of consideration, than at that time. The labourer had emerged from a state of servitude

and could now sell his labour in the dearest market. The poorer classes during the continental war, in the early part of this century, were very badly off. Great distress existed. A good old woman at Broadwindsor, where he was born, told him that she had to walk every week to Bridport for a bushel of black barley, for which she paid 14s., and upon which she and her family had to live for a whole week. Times were then very bad, and he hardly knew how the people survived them. If the same distress now existed there would be some reason to complain. Although he had flattered them upon agricultural progress, he could by no means do so upon the second part of his subject, agricultural politics. It was a singular fact that they were not united upon one single political question. They were like a rope of sand. He did not wish to introduce party politics, for he had no party to advocate. He never gave but one vote in his life, although he had been an elector for the last 30 years, and he did not think that he should ever vote again. The questions he wished to consider were agricultural politics. Those, he would remind them, were questions in which they were more especially interested. Every Session Acts of Parliament were passed for the regulation of the police and for the amendment of the law in reference to poor and other rates, and as far as he could see they generally ended in the agriculturist having something more to pay. At home they grumbled most lustily, but in a body they never suggested a remedy or complained to their members. Let them compare the action of the manufacturers with that of the agriculturists. When a bill affecting their interest was introduced, the manufacturers at once assembled at their Chambers of Commerce, and, by means of their chairmen, had their views of the bill conveyed to their representatives, who did their duty to their constituents. But the members for Dorset and for the agricultural districts generally were placed in an awkward position. They were willing to do their duty in every way; but they were not supported. Mr. Bright and some others had more power in the House of Commons than any agricultural member. And the power of the agriculturist was on the wane. It would continue so, because agriculturists did not keep their places as a body. They had some very good agricultural societies in the county—one especially good in that neighbourhood—and he had heard their members say, "Oh! we must go down to Melplash. There are some voters there. We must look after them." When their members came down, they shook hands and spent a comfortable evening, but not one word was said to them about those important matters. Their members were not supported, and did not know how to represent them. The reason was, however, that they did not know the views of the agriculturists. If they did not have Chambers of Agriculture they ought to have meetings where they could express their opinions—such as on the way-rate and the highway-rate. It was to their interest to consider these questions, because they had to pay. Their taxes had increased more than 40 per cent. since his recollection, and yet they had not lifted so much as their little finger in opposition. Who could they blame if they were willing to bear those matters so quietly? The first question under the head of agricultural politics was agricultural statistics, which formed a very interesting subject. If they asked a man who supplied the greatest quantity of corn for this country? he would unhesitatingly assert the foreigner. Nothing was farther from the truth. It was supposed that the population consumed 30 million quarters of corn annually. People were excessively misinformed upon this subject, and none more so than the producers of this country. Farmers had always shown an antipathy to furnishing those statistics, and yet he assured them that no class of men were more deeply interested than themselves. He would explain. Farmers were said to be grumblers, and if their crops were bad they made it known and large orders of corn were sent to the Continent. If statistics were accurately furnished that would be prevented. He had himself known that orders for two or three million quarters had been sent to the Continent upon the expectation of a scarcity, and when it arrived it must be sold at some price or other, which tended to lower the home produce. He believed that statistics would prevent extreme prices, and equalise the value of corn. Low prices were attributable to excess of importation. Men would not import unless they considered the imports required. So that, by withholding information, the farmers themselves were the losers. No one should be afraid of knowing facts. There was a prejudice

upon the matter. He had had himself a good deal of correspondence with the Government upon this subject. He wrote to Sir George Grey to the effect that the proposition made was very inquisitorial, and expressed an opinion that the farmers would not comply. He (Mr. Damen) suggested a way with which no one, he was sure, would find fault—namely, that it should be made by unions—that the guardians, the representatives of the ratepayers, should state the quantity grown in each parish. It would be infinitely better if the community at large were put in possession of these facts. They would then have no such thing as bread riots, which were a disgrace to the country. To suppose that by breaking into bakers' shops and destroying property the price of bread would be reduced was absurd. He questioned whether it was true that in the middle of the 19th century persons were found willing to emulate the examples of the earlier ages. The rioting mania was not only confined to the poor, but even respectable men acquiesced in such proceedings. He was travelling with a gentleman when the subject was broached, and he said that "he should like to hang all the bakers for twenty miles round" (laughter). The consumption of the country was said to be a quarter per year per head. But recent calculations had reduced the quantity to six bushels per year. Six bushels would produce a sack of flour, from which ninety-one 4lb. loaves could be made, which gave about one pound of bread per day for each of the population. The higher classes consumed less bread than the poorer classes. When provisions were dear, bread was almost the only food of the poor. But, taking the whole of the population, the average would amount to the quantity he had stated. He wished now to show them how the people were fed. For several years past the average importation of corn into this country was seven and a-half million quarters. During 1860 and 1861 the importation was larger, but that made up the average. If it was not considerably more this year, he did not know how the people were to be fed. With thirty millions of people consuming six bushels per head, the quantity consumed would be 22½ million quarters. We imported 7½ million quarters upon the average, and produced in our own country 15 million quarters a year. We only depended for one-third of our supply upon the foreigner. In the returns the quantity was given in acres. But if they multiplied the acreage by 27 bushels they would find that the yield would amount to between 12 and 13 million quarters. Seeing that a great number of farmers declined to send in a return, he thought that the 2½ million quarters would represent the deficiency.

Mr. J. POPE asked as to the system pursued in France.

Mr. DAMEN said that that system was conducted by the police. There was a system conducted in Scotland for several years. The farmers voluntarily sent in their returns of the stock reared and corn grown upon their respective farms. An attempt was made to put a screw upon them, and the secretary gave up that portion of his duties. He could not see if the Scotch farmers willingly sent in returns, why there was so much prejudice on the part of the English farmers. He advocated those returns strongly, and his sympathies were purely agricultural, having been born and bred amongst agriculturists. The second question of agricultural politics was that of corn returns. Could anyone conceive anything more ridiculous than the corn returns made in this country? He knew many buyers of corn who had never made a return in their lives. For neglect in this particular a penalty of £10 could be inflicted, but it was seldom enforced. He asked, Why not make a correct return? It was most essential, because the tithes were guided by those returns. The best wheat was generally returned, but not the inferior. The consequence was that they had to pay tithes upon the best instead of upon the worst wheat (A voice: "Why not carry the tilling to market?"). He, with others, memorialised the Board of Trade upon that question. There were then 290 towns where returns were sent in; Beaminster, he believed, being an old market-town, was among the number. But since those 290 towns were fixed upon, several markets of importance had arisen where not one single bushel was returned. It would be much better if such returns were abolished, than made in such an imperfect form. The answer received to the memorial from the Board of Trade was that 110 towns were struck off, and now only 180 towns in England sent in returns. The quantity returned originally was about one-third; now it was one-fourth of the entire produce of the country. It showed what consideration they had

received from the Government. The returns amounted to about four million quarters—only a fourth of the produce. Was it not astonishing that men should be so galled? If there was a Board of Trade, there ought to be a Board of Agriculture. He contended that it was essential that the agricultural interest should be better represented in the Government. If there were ministers of trade and commerce, there ought also to be a minister of agriculture. All the great powers except England had agriculture represented in the Government by a minister. How was it that such an important body as the agriculturists formed such a "rope of sand"? Because they did not hold together. They were not united upon a single question. If they were, their influence would be felt. Those societies formed opportunities for united action, and he urged them to give the matter consideration.

The CHAIRMAN said that it devolved upon him to express their hearty thanks to Mr. Damen for coming such a distance in order to deliver his lecture. The chairman then stated that when a boy he purchased a quantity of bones at Weymouth for manure. He was laughed at by his father; but in order that there should be no underhand work, he dressed the land and hoed the turnips himself. The turnips manured with those bones were superior in size to those grown upon the other parts of the farm. They would see that at Toller their ancestors followed this plan—they cultivated a certain spot, and having exhausted it of its fertilizing qualities, they laid it up and selected a fresh patch.

Mr. SPRAKE referred to the increase in the importation of corn, and said that in 1854-5 and 5 only 1,000 quarters of corn were imported in each year (A voice: "A million").

Mr. DAMEN: Mr. Sprake is speaking correctly.

Mr. SPRAKE then alluded to the malt tax, upon which he considered there ought to be unanimity. It was an unfair tax and ought to be remitted.

Mr. H. N. COX said that usually he was upon the opposite side, but on that occasion he concurred with almost everybody that had fallen from Mr. Damen. Reference had been made to the political interest of agriculture. They were now living in a critical period. Political excitement had attained a higher pitch than at any former time in the present century. But he was certain that amongst the agriculturists were to be found some of the most loyal subjects of her Majesty, and that they would rally round the throne and bid defiance to those miscreants who attempted to disturb the peace of the country. That was the present political feeling of the British farmer. He did not consider that the farmer had progressed in his social position to such an extent as might be expected. Let them consider past legislation. Every little parish formerly took care of itself. The churchwardens managed the affairs of the parish; the overseers, the affairs of the poor; and the waywardens, the roads and highways. Unfortunately the social position of the farmer had become so degenerated that the Government had insisted upon a number of parishes being united. They said, "We must form a political society. We must take twenty or thirty parishes to do the work over which in your several parishes you formerly had supreme control." Having referred to the example set by manufacturers, Mr. Cox continued by saying that he did not think that the farmer had emerged from the servitude in which he was placed under the feudal system. He had not to follow his liege lord and fight for his country; but where was the farmer who dared promise a vote to a political candidate contrary to the notions of his landlord? (Cries of "Oh! oh!" and signs of dissent). He believed that that system still existed; and it ought to be altered. Every Englishman ought to possess an opinion of his own, and to express that opinion uncontrolled by any mortal man. The farmers had risen in the social scale in this particular—that they were enabled to ride to market, draw comfortably, and were in much better circumstances than formerly. He was glad to find that they were going on so prosperously, and that the agricultural labourer enjoyed far greater comforts than many years since. He hoped that the advice Mr. Damen had given them would be followed. The want of unanimity was at all times disastrous. The manufacturers, in consequence of holding together, invariably carried their point.

Mr. STONE defended the agriculturists from the imputation that they were coerced by the landlords. He instanced the

names of Lord Ilchester and the Hon. Mark Rolle, who, he said, would never prevent their tenants from acting according to conscience.

Mr. J. POPE referred to Lord Ilchester, who consented to his steward (Mr. Martin) taking an active part in the election for the return of the Hon. W. H. B. Portman, but with this proviso—"You are not to interfere with my tenants." He believed that farmers were allowed to exercise their own judgment. Owing to the increase in the growth of roots, and the benefits derived from artificial manure, they had grown more corn, and sent more beef and mutton to market. A recent calculation had shown that the average turnip crop of Dorset was 22 tons 1 cwt. per acre, which would give some credit to the cultivators of the soil. 14 or 15 tons per acre was generally considered a good crop.

Mr. MILLER having made some observations in reference to the corn returns,

Mr. TOBY amusingly referred to the title Mr. Pope had given him of being a scientific farmer. He (Mr. Toby) had been fortunate in producing as good root crops as any in the neighbourhood. Unfortunately, not having measure of Mr. A, B, and C, he was unable to compete for the prizes offered at the late anniversary of the Melplash Society. Mr. Toby said that they should be particular in the selection of their

manures. He then alluded to the case tried at the Axminster County Court, and reported in the *Weekly News*, where the farmer disputed his liability to pay for worthless manure, and obtained a verdict in his favour. He thought that they ought not to purchase artificial manure, unless from a man upon whom they could rely. He attributed his success in horticulture to testing the recommendations which appeared in the papers, some of which were worthless. Mr. Toby gave a case in point. He then alluded to the unanimity amongst manufacturers, and showed that an order given by the inspectors led to a permanent improvement in machinery which endangered life. He thought that the agriculturists ought to have similar chambers for the consideration of grievances as the manufacturers, and observed that if they did not exert their influence in that direction they had no one but themselves to blame.

Mr. DAMEN, in returning thanks for the compliment paid him, said that he had really nothing to reply; as almost every speaker had assented to the observations he had made. In reference to the remarks of Mr. Cox, he would only say that his (Mr. Damen's) experience of the West of England contradicted Mr. Cox's assertions that landlords exercised an influence over their tenants. He should always be glad to assist them whenever his services were required.

SHEEP HUSBANDRY.

No one breed of sheep combines the highest perfection in all those points which give value to this race of animals. One is remarkable for the weight, or early maturity, or excellent quality of its carcass, while it is deficient in quality or quantity of wool; and another, which is valuable for wool, is comparatively deficient in carcass. Some varieties will flourish only under certain conditions of feed and climate, while others are much less affected by those conditions, and will subsist under the greatest variations of temperature, and on the most opposite qualities of verdure.

In selecting a breed for any given locality, we are to take into consideration, *first*, the feed and climate, or the surrounding natural circumstances; and, *second*, the market facilities and demand. We should then make choice of that breed which, with the advantages possessed, and under all the circumstances, will yield the greatest net value of marketable product.

Rich lowland herbage, in a climate which allows it to remain green during a large portion of the year, is favourable to the production of large carcasses. If convenient to markets where mutton finds a prompt sale and good prices, then all the conditions are realized which call for a mutton, as contra-distinguished from a *wool-producing*, sheep. Under such circumstances, the choice should undoubtedly, in my judgment, rest between the improved English varieties—the Southdown, the New Leicester, and the Improved Cotswold or New Oxfordshire sheep. In deciding between these, minor and more specific circumstances are to be taken into account. If we wish to keep large numbers, the Down will herd much better than the two larger breeds; if our feed, though generally plentiful, is liable to be shortest during the draughts of summer, and we have not a *certain* supply of the most nutritious winter feed, the Down will better endure occasional short keep; if the market calls for a choice and high-flavoured mutton, the Down possesses a decided superiority. If, on the other hand, we wish to keep but few in the same inclosure, the large breeds will be as healthy as the Downs. If the pastures be wetish or marshy, the former will better subsist on the rank herbage which usually grows in such situations; if they do not afford so fine a quality of mutton, they—particularly the Leicester—possess an earlier maturity, and both give more meat for the amount of food consumed, and yield more tallow.

The next point of comparison between the long and middle-wooled families is the value of their wool. Though not the first or principal object aimed at in the culture of any of these breeds, it is, in this country, an important item or incident in determining their relative profitableness. The American

Leicester (I use the word "American" Leicester because it is notorious that this, as well as the Cotswold and all the other heavy English varieties, soon lose in the weight of their fleeces when subjected to the climate and the *best ordinary system* of feeding in the United States; I should except, perhaps, a few highly-pampered animals) yields about 6lbs. of long coarse combing wool; the Cotswold something more, but this, perhaps, counterbalanced by other considerations; the Down from 8lbs. to 4lbs. of a low quality of carding wool. None of these wools are very saleable, at remunerating prices, in the American market. Both will become more so as manufactures of worsted and of flannels and baizes increase. The difference in the weight of fleeces between the breeds is, *per se*, a less important consideration than would first appear, and for reasons which will be given when I speak of the connection between the amount of wool produced and the food consumed by sheep.

Of the Cheviots I have taken no notice in this connection, as they are obviously inferior to the preceding breeds, except in a capacity to endure rigorous weather, and to subsist on heathy herbage. No part of the South has a climate too severe for the more valuable races, and its grasses and other cauculents, wherever found, and as far as they go, are, making the proper allowances for wet and dry lands, highly palatable and nutritious to all the varieties which respectively feed in such situations.

Under the natural and artificial circumstances already alluded to which surround sheep-husbandry in many parts of England, where the fattest and grossest quality of mutton is consumed as almost the only animal food of the labouring-classes, the heavy early-maturing New Leicester, and the still heavier New Oxfordshire sheep, seem exactly adapted to the wants of producer and consumer, and are of unrivalled value. To depasture poorer soils, sustain a folding-system, and furnish the mutton which supplies the table of the wealthy, the Southdown is an equal desideratum.

Have we any region in our Southern States where analogous circumstances demand the introduction of similar breeds? The climate, so far as its effect on the *health* is concerned, is adapted to any, even the least-hardy varieties; but not so its effects on the verdure on which they are to subsist. The long scorching summers, so utterly unlike those of England, leave the grass on lands stocked heavily enough for profit entirely too dry and short for the heavy sluggish longwools. This is particularly true in the tide-water zone. Mutton, too, sheeted over externally with three or four inches of solid fat (five, and even six inches of solid fat on the rib is not uncommon in England; in the Cotswolds the fat and lean are more intermixed, and the mutton is of better quality but it would be

considered entirely too luscious and tallowy by Americans), even if it could be made acceptable to the slave, in lieu of his ration of bacon—a thing more than doubtful—would never find any considerable market off from the plantation. So far as the supply of feed is concerned, the above remarks apply, though not equally, to the Southdown. It will live and thrive where the longwools would dwindle away, but it is a mistake to suppose that the heavy Improved Southdown will subsist and attain its proper weight and fatness on very poor or very scant herbage.

The old unimproved variety would, like some other smallish and hardy races, obtain a living on keep as poor as that which grew on the lightest and thinnest soils of Sussex. Moulded by the hand of Ellman and other breeders, to better fulfil the conditions of mutton-sheep in size and other particulars, they demand that increased supply of food which the formation of additional fat and muscle require. Retaining some of the properties of the parent stock, they are less sluggish, and bear travel better, than the long-wools; but with them, as with the latter and all other animals, much or prolonged exercise in pursuit of food or otherwise is unfavourable to obesity. Men, and particularly owners, in advocating the claims of this breed and that, seem not unfrequently to forget that the general physical laws which control the development of all the animal tissues, as well as functions, are uniform. Better organs will doubtless make a better appropriation of animal food, and they may be taught, so to speak, to appropriate it in particular directions—in one breed more especially to the production of fat, in another of muscle or lean meat, in another wool; but, *ceteris paribus*, large animals will always require more food than small ones. Animals which are to be carried to a high state of fatness must have plentiful and nutritious food, and they must exercise but little, in order to prevent the unnecessary combustion in the lungs of that carbon which forms more than seven-tenths of their fat. No art of breeding can countervail these established laws of nature.

Again, there are no facilities in the South for marketing large quantities of mutton—of a tithe of that which would be annually fitted for the shambles were sheep-husbandry introduced to anything like the extent I have recommended, and with the mutton breeds of sheep. With few cities and large villages, with a sparse population—with an agricultural population—the greatest drawback on whose pecuniary prosperity is their inability to market their own surplus edibles, not a particle of rational doubt can exist on this point. True I have expressed the opinion that, both as a matter of healthfulness and economy, mutton should be substituted for a moiety of the bacon used on the plantation; but with such a change in a country so exclusively agricultural, each landholder would raise his own supply, and thus no market be created. It may then be regarded as a settled point that the production of wool is the primary—the great object of Southern sheep-husbandry.

In instituting a comparison between breeds of sheep for wool-growing purposes, I will in the outset lay down the obviously incontrovertible proposition that the question is not what variety will shear the heaviest, or even the most valuable fleeces, irrespective of the cost of production. Cost of feed and care and every other expense must be deducted to fairly test the profits of an animal. If a large sheep consume twice as much food as a small one, and give but once and a-half as much wool, it is obviously more profitable, other things being equal, to keep two of the smaller sheep. The true question then is: With the same expense in other particulars, from what breed will the verdure of an acre of land produce the greatest value of wool?

Let us first proceed to ascertain the comparative amount of food consumed by the several breeds. There are no satisfactory experiments which show that breed, in itself considered, has any particular influence on the quantity of food consumed. It is found, with all varieties, that the consumption is in proportion to the live weight of the (grown) animal. Of course, this rule is not invariable in its individual application; but its general soundness has been satisfactorily established. Spooner states that grown sheep take up $3\frac{1}{2}$ per cent. of their weight in what is equivalent to dry hay per day, to keep in store condition; Vogt places the consumption at $2\frac{1}{2}$ per cent.; my experience would incline me to place it about midway between the two. But, whatever the precise amount of the consumption, if it is proportioned to the weight, it follows that, if an

acre is capable of sustaining three Merinos weighing 100lbs. each, it will sustain but two Leicesters weighing 150lbs. each, and two and two-fifths Southdowns, weighing 125lbs. each. Merinos of this weight often shear five pounds per fleece, taking fleeces through. The herbage of an acre, then, would give 15lbs. of Merino wool, and but 12lbs. of Leicester, and but 9-3-5ths lbs. of Southdown (estimating the latter as high as 4lbs. to the fleece)! Even the finest and lightest-fleeced sheep, ordinarily known as Merinos, average about 4lbs. to the fleece; so that the feed of an acre would produce as much of the highest quality of wool, sold under the name of Merino, as it would of new Leicester, and more than it would of Southdown! The former would be worth from fifty to one hundred per cent. more per pound than either of the latter! Nor does this indicate all the actual difference, as I have, in the preceding estimate, placed the live-weight of the English breeds low, and that of the Merino high. The live-weight of the four-pound fine-fleeced Merino does not exceed 90lbs.; it ranges from 80lbs. to 90lbs.; so that 300lbs. of live weight would give a still greater product of wool to the acre ("It is understood that all of these live-weights refer to ewes in ordinary, or what is called store condition"). I consider it perfectly safe to say that the herbage of an acre will uniformly give nearly double the value of Merino, than it will of any of the English long or middle wools. The important question now remains—What are the other relative expenses of these breeds? I speak from experience when I say that the Leicester (I speak of full-blooded Leicesters—some of its crosses are much harder than the pure-bred sheep) is in no respect a harder sheep than the Merino; indeed, it is my firm conviction that it is less hardy, under the most favourable circumstances; it is more subject to colds, and I think its constitution breaks up more rapidly under disease. The lamb are more liable to perish from exposure to cold, when newly dropped. Under unfavourable circumstances—herded in large flocks, pinched for feed, or subjected to long journeys—its capacity to endure, and its ability to rally from the effects of such drawbacks, do not compare with those of the Merino. The high-bred South Down, though considerably less hardy than the unimproved parent stock, is still fairly entitled to the appellation of a hardy animal. In this respect I consider it just about on a par with the Merino. I do not think, however, it will bear as hard stocking as the latter, without a rapid diminution in size and quality. If the peculiar merits of the animal are to be taken into account in determining the expenses, and I think they should be, the superior fecundity of the Southdown is a point in its favour, as well for a wool-producing as a mutton sheep. The Southdown ewe not only frequently rears twin lambs, as do both the Merino and Leicester, but she possesses, unlike the latter, nursing properties to do justice by them. But this advantage is fully counter-balanced by the superior longevity of the Merino. All the English mutton breeds begin to rapidly deteriorate in amount of wool, capacity to fatten, and in general vigour, at about five years old, and their early maturity is so offset to this, in a sheep kept for wool-growing purposes. The early decay would require earlier and more rapid slaughter or sale than would always be economically convenient, or even possible, in a region situated in all respects like the south. It is well, on properly-stocked farms, to slaughter or turn off the Merino wether at four or five years old, to make room for the breeding stock; but he will not particularly deteriorate, and he will richly pay the way with his fleece, for several years longer. Breeding ewes are rarely turned off before eight, and are frequently kept until ten years old, at which period they exhibit no greater marks of age than do the Down and Leicester at five or six. I have known instances of Merino ewes breeding uniformly until fifteen years old. The improved Cotswold is said to be harder than the Leicester; but I have said less of this variety, throughout this entire letter, as from their great size (I saw two at the late N.Y. State Fair, at Saratoga, which weighed over 300lbs. each!) and the consequent amount of food consumed by them, and the other necessary incidents connected with the breeding of so large animals, the idea of their being introduced as a wool-growing sheep anywhere, and particularly on lands grassed like those of the South, is, in my judgment, utterly preposterous. There is one advantage which all the coarse races of sheep have over the Merino; either because their hoofs do not grow long and turn under from the sides, as do those of the

Merino, and thus hold dirt and filth in constant contact with the foot, the coarse races are less subject to the visitations of the foot-ail, and when contracted, it spreads with less violence and malignity among them. Taking all the circumstances connected with the peculiar management of each race, and all the incidents, exigencies, and risks of the husbandry of each fairly into account, I am fully convinced that the expenses, other than those of feed, are not smaller, *per capita*, or even in the number required to stock an acre, in either of the English breeds above referred to, than in the Merino. Nor should I be disposed to concede even equality, in these respects, to either of those English broods, excepting the Southdown.

You write me, sir, that many of the South Carolina planters are under the impression that coarse wools will be most profitably grown by them—*first*, because there is a great deficit in the supply, and they are better protected from foreign competition; and, *secondly*, because they furnish the raw material for so great a portion of the woollens consumed in the South. Each of these premises is true; but are the conclusions legitimate? Notwithstanding the greater deficit and better protection, do the coarse-wools bear as high a price as the fine ones? If not, they are not so profitable, for I have already shown that it costs no more to raise a pound of coarse than a pound of fine wool; nay, a pound of medium Merino wool can be raised more cheaply than a pound of the Southdown, Leicester, or Cotswold! This I consider clearly established.

Grant that the South requires a much greater proportion of coarse than of fine wool for her own consumption. If a man, needing iron for his own consumption, wrought a mine to obtain it, in which he should find gold equally accessible and plentiful, would it be economical in him to neglect the more precious metal because he wanted to use the iron? or should he dig the gold, obtain the iron by exchange, and pocket the difference in value? Would it be economical to grow surplus wool—wool for market—worth from 25 to 30 cents per pound, when it costs no more per pound to grow that worth from 40 to 45 cents? And even for the home want—for the uses of the plantation—for slave-clothes, &c., fine wool is worth more per pound than coarse for actual wear or use. Is this proposition new and incredible to you? I challenge the fullest investigation of its truth, through the testimony of those familiar with the subject, or through the direct ordeal of experiment. It is true that a piece of fine broad-cloth is not so strong, nor

will it wear like a Chelmsford plain of treble thickness. The threads of the former are spun to extreme fineness, to economise the costly raw material. To give it that finish which is demanded by fashion—to give it its beautiful nap, these threads are still further reduced by "gigging" and "shearing." But spin fine wool into yarn as coarse as that used in Chelmsford, and manufacture it in the same way, and it would make a far stronger and more durable cloth. The reasons are obvious: merino wool is decidedly stronger than the English coarse long and middle wools, or any other coarse wools, in proportion to its diameter or bulk. It felts far better, and there is therefore a greater cohesion between the different fibres of the same thread, and between the different threads. It is also more pliable and elastic, and consequently less subject to "breaking" and abrasion.

Unless the views I have advanced are singularly erroneous, it will be seen that, for wool-growing purposes, the merino possesses a marked and decided superiority over the best breeds and families of coarse-wooled sheep. As a mutton-sheep it is inferior to some of those breeds, but not so much so as it is generally reputed to be. If required to consume the fat and lean together, many who have never tasted merino mutton, and who have an unfavourable impression of it, would, I suspect, find it more palatable than the luscious and over-fat New Leicester. The mutton of the cross between the merino and "native" sheep would certainly be preferred to the Leicester by anybody but an English labourer used to the latter. It is short-grained, tender, and of good flavour. The same is true of the crosses with the English varieties. These will be hereafter more particularly alluded to. Grade merino wethers (say half-bloods) are favourites with the Northern drover and butcher. They are of good size—extraordinarily heavy for their apparent bulk (on account of the shortness of their wool, compared with the coarse breeds), make good mutton, tallow well, and their pelts, from the greater weight of wool on them, command an extra price. They would, in my opinion, furnish a mutton every way suitable for plantation consumption, and one which would be well accepted in the Southern markets.

In speaking of the merino in this connection, I have in all cases, unless it is distinctly specified to the contrary, had no reference to the Saxons, though they are, as is well known, pure-blooded descendants of the former.—*Dr. Randall in Melbourne Economist.*

INVERNESS FARMERS' CLUB.

At the Inverness Farmers' Society, a discussion took place on the question—"Is it more suitable and profitable in the district to breed stock, and rear them till they are matured for the butcher, or to buy in stock at one or two years old and feed them?"

Mr. ROBERTSON, Drynie, said: In the north here, at a distance from markets, and owing to the quality of the soil, he certainly thought in general that rearing cattle and disposing of them to those who had better land was the proper course. There might be some farms in the north with fine land, where it would be more profitable to buy growing stock and feed them; but so far as his experience went, the breeding and rearing of stock, without fattening, was the most profitable method.

Mr. MURRAY, Kilcoy, was very much of the same opinion as Mr. Robertson, because unless stock were bred they could not be fed. Farmers should never come to the conclusion not to breed cattle, for if everybody arrived at that where would stock be found to feed? At the same time, it became a matter of opinion to farmers themselves which was most profitable in any particular case. If they did breed, let them breed well, and by that means they would have a good stock whether they bred or whether they fed.

The CHAIRMAN: You have omitted to say whether, in your opinion, it is better not only to breed but to feed your own stock, than to buy in stock for feeding.

Mr. MURRAY: If I bred a beast, I should like to feed it out—feed to the end if I once bred it.

Mr. MACLEWEN, Moyhall, said, so far as he was personally concerned, he found it easier to breed than to fatten. In other parts of the country it was different. In East Lothian, for example, farmers made it a point to breed as little as possible, because they could turn their fine land to more profitable account in other ways.

Mr. Inkson and Mr. Paterson, Balrobert, expressed themselves much to the same effect as Mr. Robertson. Mr. Fraser, Wells-street, differed; in many cases he thought it was more profitable to buy cattle and feed them than to rear them.

Mr. MACLEAN, V.S., said if they confined their remarks to their own locality they could not lay down a rule. For farmers here, however, he judged it best to sell and buy again. It was much more profitable to sell their animals as stirks than to rear them and sell them as one or two year olds.

Mr. GAIR, Hilton, did not agree with some of the former speakers that it was better to sell off year-olds. That practice was very apt to give a farmer a false impression as to the profits he was realising. He must keep a great many cows, and, of course, rear a great many calves, and his farm would thus deteriorate very much. His manure must be very inferior, and though thinking that he was getting large prices, it would be found if the cattle were fed and sold off that a larger profit would ultimately be made, and a farm would be kept in a higher state of cultivation. For his own part, he could scarcely say that he was a rearer or feeder, but if he was placed in a part of the country where he could not sell his grass so advantageously, he would rear his stock and feed them off.

Mr. MACPHERSON, Drummore, agreed with the other speakers, that the whole question depended very much on the locality where any person held his farm. He thought the wisest and most profitable system altogether, where farmers could keep on their cattle (as they could not in many instances), was to rear and keep as many cows as the farm would admit of, so that they could finish off their young stock in three-year-olds, selecting a few of their best queys to keep up their stock of cows.

Mr. FRASER, Beaul, said that, in his opinion, there were decidedly two trades involved in the matter. The man who could rear and feed off his stock was the most fortunate; but the bulk of the people in this district could not do that. He agreed with Mr. MacEwen, that rearing was their department. There were very few people, so far as he was aware, who were able to do the two trades well, and when one was carried on successfully it must be by itself.

Mr. GENTLE, Dell, said he foresaw whatever conclusions were come to on this question would make little difference in common practice. Some would only breed cattle, and some would only feed them; but he would say every farm ordinarily well fitted should not only breed cattle, but every living creature, from the hen to the horse, requisite for the farm, and not only breed them but also feed them, and send them to the market perfected. There would be difficulties to be encountered, no doubt. Some would say they could breed greater numbers than they could feed, and others that they could feed greater numbers than they could breed; but here there was a principle of adaptation. Those who breed many would require to make a liberal use of feeding stuffs—cake and corn—and get quit off at an early age; those who could breed few would require to keep to a greater age; and although that was done there was no loss to three years, or even to four; but in no case should farmers raise surplus cattle to oblige their owners to go over parishes to take grass parks. No system was more commonly a losing one than that. Mr. Gentle would take the opportunity of correcting a misrepresentation of what he had said at last discussion concerning the feeding of cattle. The question was propounded as if artificial substances were *all* that was required for the feeding of cattle. He said no successful or profitable feeding could take place except where turnip was the staple—and to this he adhered—and at the same time gave all the merit to artificial substances they deserve, which was immense: it was to that degree that cattle could be fed at any age, and were so fed—an attainment never aimed at even in the recollection of the present generation.

Mr. ANDERSON of Lochdhu said that, in his opinion, where there was ordinary good land, and a farm of perhaps 200 acres, rearing stock, say until they were three years old, yielded the best profit and gave the least trouble. On such a farm the tenant could keep ten cows, ten calves, ten yearlings, and ten two-year-olds, and these he ought to feed off in the early part of the year. He should not let them fall off one month. There was always plenty of artificial food, although some seasons it was a little expensive; and when their grass was much cut up it was a great help to them that they could take to artificial food till they got turnips and straw, for generally in this part of the country, in the months of August and September, their grass was very scarce indeed. He had had the opportunity of knowing about farming in the counties of Inverness, Nairn, and Moray, and he found that was the way a man was best paid and had least trouble. There was no cattle better fed than those reared upon the place. In some parts of the country this plan could not be followed. In the west coast, for example, they could rear stock and keep them on till winter as well as in the low parts of Inverness-shire, but then in the winter season they fell off for want of turnips and straw, and the best course for the west coast farmers was to sell their animals as six-quarter-olds instead of keeping them till they were two years old.

Mr. KEMP, Balnaglack, gave it as his opinion that it was more profitable for the farmer to buy in stock at one-year-old than rear them himself; and with the view of showing the meeting how he arrived at this conclusion, he should suppose the following case. Start with a cow three-year-old, price £17;

For the cow's keep per annum, calculate	... £7 10 0
Suppose the milk per annum, after nursing the calf, worth	... 2 10 0
	<hr/> £5 0 0

Leaving £5 as the price of the keep of the cow upon the calf.

For the calf's grass	... 1 5 0
For winter keep	... 2 5 0
For oilcake	... 1 13 0
For the keep of a bull for each cow	... 0 10 0
For the wear of the cow per annum	... 0 13 0
Dairymaid's labour, &c.	... 0 7 0
	<hr/> £11 13 0

He would suppose that such a calf at one year old could be bought at ... 10 0 0

Which made a loss of ... £1 13 0

He considered that 10s. on each cow would pay the keep of the bull, and when going to change the price of the old animal would buy a young one. He also considered that the 13s. per annum for the wear of the cow for ten years' breeding (which will make her then thirteen years old), would be sufficient to make the cow fat for the butcher; and in this case there might be no actual loss upon the cow. Regarding feeding off, he thought it was every farmer's interest to fatten as many as he had keep for.

Mr. MACBEAN, Nairnside, said he believed this district was very favourable for rearing cattle of every description. He thought that the deficiency or the failure of stock was greatly attributable to not keeping proper blood. Farmers should rear and carry forward as much as possible. His own experience was, that cattle reared on the farm always succeeded better than cattle introduced into it. He never sold off year-olds, except shorthorns; he always carried them on to two or three years old.

Mr. FRAZER, Balloch, said he had been rearing cattle for many years, and keeping them till they were two years old. He found several advantages to himself in that. Having generally a considerable amount of straw, the two-year-olds were very useful, and he found he could sell them as two-year olds more profitably than as one-year-olds. No doubt, as several had remarked, there was a difference in the expense which perhaps lessened the profits, but he had come to the conclusion that for him, at all events, the former method was more advantageous. He was not at all inclined to think with some that stock should be reared till they were brought to perfection. Others, perhaps, could bring them to maturity more profitably than they could do in this district. In Aberdeenshire, for instance, one of the finest and largest feeding counties in Scotland, cattle could be much more easily fed than here; and he thought therefore, it was better to sell the animals when they had attained a certain growth.

The CHAIRMAN then summed up. The result of the discussion was, that the meeting was very nearly equally divided, there being on the one side ten, and on the other twelve, who had expressed decided opinions, but the majority, when his own opinion was expressed, would be reduced to one. He very much coincided with Lochdhu and several other gentlemen round the table. He knew it was not a profitable thing so far as stock was concerned, and particularly so far as land was concerned, to keep a breeding stock. In this district, wherever the land and the houses were tolerable, a farmer ought to breed and feed his own stock, and to feed only his own stock. There was nothing better known to experienced men than that strange stock brought into a firm did not thrive for the first few weeks, perhaps months, whereas, if their own stock was kept, they would always be going forward. He said, therefore, if they had the right kind of blood, suitable accommodation, and a properly-sized farm, every farmer should follow this course. In land such as he held himself, however, he was afraid that system would not suit. The climate was too cold and the accommodation too bad, with other drawbacks, so that the only thing for him was to breed, and breed as much as he could.

LANDLORD AND TENANT IN SCOTLAND.

THE PROPER SPHERE OF THE CHAMBER OF AGRICULTURE.

In the present advanced—and we may hope we may still say advancing—state of agriculture in this country, there is no small difficulty in having the relation between landlord and tenant properly regulated. Not only are the existing laws, but even the prevailing ideas, and this among a large number of tenant-farmers themselves, based on a state of things the reverse of that which now exists. In a primitive agriculture, almost the only conditions of cultivation, we may say, are the land—that is, the capital of the landlord—and the labour and skill of the tenant. Now, the capital of the tenant is not only an important element, but, where improved arable farming (and pastoral also may be included in the remark) is carried out, the capital of the tenant represents a greatly larger amount than that of the landlord. The landlord—and the principle of the lease does not affect this view of the case—gives to the tenant the temporary use of the raw material of the land, and the yearly rental represents the capital of the landlord which is at stake. It is not just in this connection to represent the capital of the landlord which is involved as that of the fee-simple of the land. The principal, so to say, is not imperilled, is not entrusted to the tenant; it is only the interest, that is, the rental. No doubt, the value of the land on the whole depends on its proper cultivation, and on the best conditions for that purpose; but both parties are agreed to this, and that is not the point which is now under consideration. It is the protection, for the time being, of the rights, or rather the capital, of both parties; and the capital which is represented here is not the fee-simple value of the land, but the rental: this on the side of the landlord. On the side of the tenant, again, there may be assumed to be involved an amount of capital five or even ten times greater than that of the rental, and this is all directly imperilled in the commercial agreement between landlord and tenant. When agriculture has reached a point where the farmers with their own capital take the entire manufacture of the article, a most important change has taken place, and that under conditions which vastly increase the products and also the cost of production; a change which wholly alters the former relation of parties, so far as capital is concerned, and, one might infer, so far as the protection of capital is also concerned. When the conditions which exist between the owner of this raw material—land—and the manufacturer of it are more fully considered, this view of the case is only strengthened; for the value of the raw material in agriculture bears the smallest proportion of that of almost any raw material to the value of the manufactured article; as manufacturers, therefore, the farmers are pre-eminently the greater capitalists. No doubt, there is one peculiarity about land, a most important one, and which must necessarily modify such arrangements. The raw material is not acquired by the tenant-manufacturers; it remains with the proprietor, and this, as we have remarked, must affect the arrangements. Of course, without this the landlord would have no place at all, and the tenant as the manufacturer would have no arrangement with him as to how the raw material was to be dealt with; but this peculiarity is greatly misunderstood if it is supposed to change the nature of the relations between the two parties. The tenant is still the manufacturer, and in this case, in relation to the value of the raw material, a manufacturer of greater comparative capital. Clearly, then, if other manufactures are at all to be a guide in this case, and even under the condition to which we have referred, the tenant as a manufacturer ought to have as much freedom of action as can be secured in the circumstances, and, as the superior capitalist, he ought to have adequate protection for his capital; what this freedom of action should be, we have at present only in caricature. The manufacturer, in this case, with ten times the capital involved of the proprietor of the raw material, has practically his hands tied. At fifty points he can be taken up by an offended landlord, an officious agent, or an exacting trustee. Worst of all, he is obliged to support an army of vermin that not consume only, but destroy

his manufactures. Why, what would be thought if some proprietor of a mill should let it to a manufacturer on condition that, as the proprietor was the patron of the mouse-tribe, he should carefully feed and protect at least an ascertainable number of these vermin—the manufacturer not having the power to destroy them, even as they were seen nibbling at his cotton or lint threads? Still more, what would be thought of the conditions of let, if it was also provided that whatever the injury, the manufacturing lessee was debarred from all legal redress? No doubt it will be said no such arrangement is practicable. But here at least Parliament has shown itself to be omnipotent, for it has given such a system of legislative sanction, and the tenant manufacturers, at least some of them, patiently submit. Our agricultural readers—for we fear the proceedings at the Chamber of Agriculture create less general interest than they ought to do—may well stand aghast at the state of matters as presented at last meeting. If a Chamber of Agriculture can contain so many members with such small appreciation of the rights of their class—we should rather say, the principles of common fairness—as to support Mr. Dickson's amendment that a lease should only be assigned with the landlord's consent, one can only regret that the opinion of the farmers of Scotland is so little in harmony with the progress of the age. We should suppose, however, that three-fourth of the minority were either proprietors or factors; and every one knows how, in such circumstances, opinion almost universally reflects the interests and circumstances of individuals. It is painful to review the position of the tenant-farmers of this country in its commercial relations; for, so far as theory is concerned, the legislation perhaps of no country presents so much injustice. Practically, that legislation may be counteracted by public opinion, and the honourable feeling and sense of right of the proprietors themselves. But this is a feeble argument, in these days of political change at least, to let the anomaly remain, while occasionally it creates a practical injustice, which it requires much respect for law, and patient endurance of wrong, quietly to submit to. But most extraordinary were the speeches and the vote on the subject of the assignation of leases. Mr. Goodlet's second resolution was thus clearly and tersely expressed—"That, with the view of giving protection to the capital of the tenant, and of inducing increased application of capital to the soil, leases ought not to be of shorter duration than nineteen years, and that provision should be made on just and fair terms for assignments." Now, practically, the case turns on the death or bankruptcy of a tenant. The cases of assignation on other grounds are so rare, and any abuse of them—if they were not absolutely excluded, or in such cases made contingent on the landlord's consent—is prevented by the "just and fair terms" of Mr. Goodlet's motion. Even the cases of assignation on death may be considered practically set aside, as there are few proprietors who do not act fairly in such circumstances. We say practically; but how much better would it be to have the right—for such it is—recognised? The bankruptcy cases, therefore, are those which chiefly remain, and we think Mr. Dickson did not show his usual judgment in so prominently presenting this point. Our report thus gives his views:—"In regard to the clauses excluding assignees and sub-tenants, I must say I differ from the opinions expressed by the gentlemen who have preceded me in the discussion, as I consider this a fair and reasonable clause to be inserted in every lease. On all well-managed estates, it is usual for the proprietor, or those acting for him, to select a tenant who has not only sufficient capital and skill for the undertaking, but also that he is of respectable character, and would be a desirable resident on the estate. I have often known tenants selected at lower rents than were offered by them on this account; and seeing this is the case, would it be fair to a landlord that assignees, or a trustee on a bankrupt estate, should have power to sublet the farm (for, it may be, the greater part of nineteen years) to the most disagreeable tenant in the dis-

trict? I cannot see that it would be so, as in such a case the duty of a trustee would be to let the farm to a man who would give him the largest sum for the lease, provided he had sufficient capital to guarantee his fulfilling the terms of the contract, irrespective of his other qualifications." Now, it is to be remarked that the value of an assigned lease is often very considerable. Everyone knows that, as a rule, it is the closing part of the lease which pays. The enterprising tenant expends with this view, and the recognised value of the lease rests on this. But that value is the result of the tenant's capital. This, too, must be admitted as a rule. It is certainly not essential for our argument, but it very greatly strengthens it. It must, therefore, be borne in mind that the value of the lease may be considerable, and whatever it is, it is produced by the tenant's capital. But the tenant fails; often, it may be, from an extreme expenditure, and thus raising the assignable value of the lease. By the law of hypothec, the landlord loses nothing by the failure of the tenant; but all the more on this account do the other creditors. Perhaps all that remains to them is the remnant value of the lease; and in every view of the case it is theirs. But the creditors are not to get its commercial value—nay, it is not to be a marketable article, without the landlord's consent! And why? Because the new tenant may be disagreeable to the landlord! The landlord, of course, could take the lease at its valuation—the commercial valuation which the recognised mode of letting farms has established. He is the more able to do this, as he alone of the creditors has got scot-free. Does there seem much injustice—much oppression in this? And this is the worst which under Mr. Goodlet's resolution could befall him. On the other hand, the creditors, who had previously lost so much through the landlord's hypothec, and in no great humour with him or with it, must have the commercial value of all that remains to them—the lion's share being withdrawn—contingent on the whim and the caprice of the lord of the situation. It is not that the arrangement can very materially affect the interests of landlords or tenants as a class; but we confess to a feeling of unutterable surprise that such a privilege, which suggests more than the pre-Revolution privileges of the Gallican nobles, should be contended for in our day, and that influential tenant-farmers should publicly give a preference to the merest whim of a landlord over the fundamental principles of equity and right feeling.

We may notice the remark of Colonel Graham as to the absence of landed proprietors from the membership and meetings of the Chamber of Agriculture. Now, though we have always contended in the most absolute manner for a commercial arrangement exclusively between landlord and tenant, being satisfied that this is alone compatible with the law of progress, and with the interests of both parties, in the long run, there is nothing more desirable than the occasional meetings of landlords and tenants. The narrowing circle of proprietorship, under those legal conditions which are moulding the proprietorship of our country after so contracted and dangerous a plan, prevents more than a very general and remote mixing of the classes. Even this, however, is important; and we think agricultural societies, if less useful than

they once were in their influence on agricultural progress, are more needed than ever as a bond of social compact, to whatever extent they may contribute to this. But we have from the first regarded the Chamber of Agriculture in a different light, and considered its sphere a higher and more important, if a more difficult, one. It aims, as we understood it its establishment, at the representation of the tenant-class element in Scotland. There is, it was at once perceived, a great difficulty in drawing an absolute line. There are several doubtful species here, as elsewhere. Proprietors are occasionally farmers, and this in a descending ratio till they almost wholly meet. What are factors? Above all, what and who are land-agents? On all considerations, therefore, it was clearly desirable not to over-circumscribe the membership. It must include all the conditions of tenant-farmership. And it was even then doubtful how far it was prudent to exclude proprietors who may have shown—and the application for membership, at least under certain conditions would show this—that their sympathies and opinions are with the tenant class as a whole. With these difficulties, and rather because of them, we still felt that it was essential that the Chamber of Agriculture should be a tenant-class organization. We believed this could be secured by the character of its executive rather than of its membership. But, in whatever way, that result is an indispensable one. The present, or we might say the advancing, position of the tenant-farmer is purely a modern growth. Its true position has to be defined, and—a still more difficult task—applied. There are other and most powerful interests which, as such, are directly opposed to it. There are others equally powerful, but indifferent to the position of the tenant-farmer. That this class should be represented, is clearly of the greatest importance; but it is even more essential that it should be properly represented—represented, that is to say, in the broad, outstanding principles and interests with which it is connected. In short, the Chamber of Agriculture must be pre-eminently and *par excellence* a tenant-farmers' association; and in maintaining this character it is necessary that it should not only utter now and again significant and well-defined sentiments, but should practically help forward the cause of agricultural freedom. To be directly a political institute, would be fatal to its stability, and even to its influence: to be too sensitive on this point, and to make its membership the ideal of the "happy family," where no note of discord is heard just because there is no note of tenant-right, might not be as fatal to the stability, but would prove more directly so to the influence, of the Chamber of Agriculture. That body must not misunderstand indications. The Chamber may get great laudations; and if words were wind—which, in a different sense, they too often are—the good old ship would soon be in the haven to which she points. But, all the while, she may be safely anchored in her native roads. The Chamber of Agriculture must not be afraid of storms, if she is to reach what may be a rather more distant port than some suppose; and we confess we would have heard with greater satisfaction—in the interests of both classes—of a possible severance rather than of a closer union in the Chamber of Agriculture between the landlords and tenant-farmers of Scotland.—*Daily Review*.

THE CAUSES OF DISEASE.

OVERCROWDING.

Want of adequate space is generally synonymous with want of pure air. Indeed, nothing more seriously contaminates the atmosphere of a confined building than the crowding into it of a number of living animals. From their lungs and skin are continually given off carbonic acid and watery vapour, containing various excrementitious matters. Although these emanations are invisible and intangible, they are palpable enough to some of the other senses, and also betray their presence by their depressing influence on health. Without the free movement of fresh volumes of air, these gaseous off-scourings hang like a mort-cloth around the living body, checking its salutary self-purification. But this is not all. In the crowded abodes of living animals these noisome excrementitious matters are

breathed again and again, and probably also may sometimes be swallowed. They are, however, in a condition of molecular change or decay. Like the yeast-plant in a saccharine solution, they tend to develop similar putrefactive changes in any living bodies to which they gain access; thus they act as dangerous blood-poisons. In overcrowded stables, cattle-peas, or kennels, the solid and liquid excrements contribute their pungent quota to the volatile but not less noxious waste-products which are continually given off by the lungs and skin. On living animals overcrowding develops disastrous results—exactly like those consequences as flowing from want of air. It depresses vitality, incapacitates for exertion, increases the liability to most diseases, and especially to zymotic disorders.

Chronic coughs, ophthalmia, gastric fever, and glanders and farcy are rarely long absent from overcrowded stables. Diseases are accompanied by a low type of fever, are tedious, intractable, and unusually fatal. In crowded premises contagious disorders readily spread.

Every species of warm-blooded animal suffers seriously from overcrowding. Cattle, although their lungs are smaller and their requirements of air and space are accordingly less than those of the horse, when too closely packed together are attacked by chronic cough, and become prone to take dysentery, pleuro-pneumonia, or any other prevailing malady. Young calves withstand crowding badly, and, if kept in small confined houses, perish in large numbers from diarrhoea or dysentery. Crowded kennels are notoriously unhealthy, and prove hot-beds of distemper, diarrhoea, mange, and rheumatism. Even poultry, to thrive well, must not (to use the popular phrase) be "too thick on the ground." So thoroughly aware of this are the breeders of prize-birds that their finest broods, as soon as hatched, are sent to be reared by some neighbour or cottager who does not keep fowls. I am assured by a very successful exhibitor of first-class Dorkings that the broods thus raised were handsomer, hardier, and stronger than any he was able to bring up at home.

And yet, however, there are no reliable veterinary statistics which fix definitely the amount of sickness and mortality which actually accompany overcrowding amongst animals. The census returns and Registrar-General's reports conclusively show that, in proportion as human beings are aggregated together, sickness increases and life is shortened. Large towns are notoriously less healthy than the open country, and the crowded parts of the same town show a higher rate of sickness and mortality than the more open portions where houses and people are less densely packed. Until reformed mainly by the exertions of the late Lord Herbert, the sanitary condition of the British army afforded very striking evidence of the mortality resulting from insufficient space. The Guards, although carefully-picked men in the prime of life, well-fed, and with a light healthy out-door occupation, were so abominably lodged in small and crowded rooms that their mortality, according to Dr. Farr, exceeded 20 in the 1,000—being a much higher percentage than was found amongst any body of men of the same age in England. The troops of the line, having rather more space, showed a mortality of 18.7; whilst in Manchester (so notoriously unhealthy) the number was but 12; and, taking into account the whole male population of the same age throughout the country, the mortality per 1,000 was only 9.2.

For the enjoyment of health all animals require, as already insisted on, constant supplies of pure air; and this necessity of life can only be ensured by giving animals a sufficient amount of cubic space, and by arranging for the frequent renewal of the air within that space; in other words, plenty of air must be afforded and attention paid to thorough ventilation. Where good provision is made for thorough ventilation an animal will obviously do with a lesser amount of cubic space. Unfortunately, however, the two evils generally concur; and overcrowded stables, although standing in greatest need of ventilation, are frequently without any rational means for the egress of heated foul air and the ingress of cooler pure air. In the living and sleeping rooms of adult men and women 800 cubic feet of space is found essential. Horses, having larger lungs than men, require a larger amount of pure air, and hence ought to have abundance of room. No full-sized horse should ever have less than 1,000 cubic feet of space, and where it can possibly be managed double that amount will be greatly preferable. Horses confined during the greater part of the day obviously require more space than horses that spend a larger portion of the 24 hours in the open air. At the Royal Mews at Buckingham Palace each horse has 2,500 cubic feet; at the Prince of Wales's stable, Marlborough House, 1,700; at Messrs. East's, Dyer's, Fowler's, Philip's, and others of the first-class dealers' and job-masters' establishments, the cubic space ranges from 1,000 to 1,500 feet. In the premises of the London, Chatham, and Dover Railway Company 1,200 feet are allowed; whilst in the new, lofty, and well-arranged stables of the South-Eastern Railway each horse enjoys 1,540 cubic feet. Such airy and healthful premises stand in favourable contrast to many of the stables in the mews-lanes of most of our towns. Here valuable hacks and carriage-horses, the horses of medical men, as well as the animals of humbler owners, are often crissed up in low, narrow, confined stalls

where the cubic space is under 700 feet. Amongst the lower classes of cab, omnibus, and cart-horses, even less space, with less facility for ventilation, is allowed. In some large stables we have known horses packed so closely that each animal had but 450 cubic feet, or about one-third of the space requisite for health and comfort. Such close packing is sometimes justified on the plea that horses require warmth, but pure air is even more essential than warmth; nor are the two requisites by any means incompatible with each other.

In providing accommodation for horses intended for pleasure, whose work is irregular, and a large portion of whose time is spent within-doors, boxes are greatly preferable to stalls. In a box the horse can move about at pleasure, and rest his limbs by standing in various positions. We have often had occasion to remark that horses kept in good roomy boxes move more freely and safely than their fellows which are constantly tied up, and that their legs are usually sounder and freer from wind-galls and other blemishes. To be comfortable and commodious, boxes ought to measure at least 12 feet by 16 feet. As in the stable, a loft overhead is a great disadvantage, interfering with ventilation; if it cannot be dispensed with, it should be kept 10 feet from the floor.

The Romans appear to have been practically conversant with the importance of allowing their horses plenty of room. In the excavations at Herculaneum and Pompeii the stables are found to be convenient and commodious, and arranged only for a small number of horses: seldom for more than four or five. Small separate stables, although largely adopted in the best hunting and racing studs, are expensive and sometimes inconvenient for large establishments; and with proper precautions for adequate cubic space and effectual ventilation, good healthy stables may be made to accommodate large number of animals. Some of the large stables recently erected at Aldershot for the horses of the military train are capable of holding forty or fifty horses, and nevertheless are roomy, airy, yet comfortable, and free from draughts. In a healthy stable the stalls or standings must be 8½ feet wide, whilst 15 feet should be allowed for the stall and space behind the horse. Black Stourbridge bricks, grooved to prevent slipping, constitute one of the best and cheapest articles for flooring. Proper gutters with gratings and stink-trap should be behind every horse. Darkness is so apt to become a cloak for filth that even for heavy draught horses sufficient light should be provided. Every stable for six horses should be provided with two windows, which may be 4½ feet by 3½ feet, and made to open. Iron are preferable to wooden frames, and swinging casements to sashes. Doors require to be 4½ feet, strong and substantial, and are best made in two parts, so that the upper can in warm weather be left open without causing undue draught. In front of every horse, or between every two, should be placed ventilating gratings, 20 inches long by 12 inches high, and so made and placed that they can be easily regulated at pleasure to admit little or much air. The ordinary variety, consisting of two iron plates, sliding over each other, and with longitudinal openings of about an inch, are more convenient and not so often out of order as the louver boards. By such arrangements fresh air is readily admitted—not as in most of the older systems from behind, to cool the animals' tails, and travel onwards to the nostrils only when impregnated with the flavour of the droppings, but at the animals' head, where it is specially required. By ventilators in the roof, or, where there is a loft overhead, by means of a six-inch metal or stoneware tubing carried through it to the slates, the heated and contaminated air must be provided with convenient means of exit.

Farm horses are especially apt to suffer from over-crowding when arrears of work bring into the stable all the available draught power of the farm, and when the weather is close and warm. In farm stables the provision for ventilation is seldom sufficient safely to permit of crowding, and it is a wise policy to place the surplus horses in the yards which in spring are generally vacated by the cattle. Indeed sheltered yards with ample shedding form the most comfortable and healthful quarters for farm horses during at least eight months of the year. In such yards, if these are not occupied by cattle, horses may be kept during the summer and autumn months more economically and as comfortably as in the grass fields, where they devour the best of the food, and are often in mischief.

ERRORS OF DIET.

Every action, physical or mental, occasions a waste of the

structure immediately concerned in the production of that action. Every act of the mind causes a consumption of the tissues of the brain, every contraction of a muscle wastes some of the particles of that muscle. This waste produces a constantly recurring demand for new material. At definite intervals this demand attracts attention by exciting the sensation or appetite or hunger; and this sensation is removed and the demand satisfied when new material or food is introduced into the body in sufficient quantity and of suitable quality to repair this waste. In such circumstances the demand and the supply are justly balanced. This occurs in most of the higher animals when they are assimilating daily food to the extent of 1-23rd of their live-weight. When, however, the supply exceeds the demand, the animal increases in size and weight. When, on the other hand, the demand exceeds the supply, when the amount of waste or effete matter is greater than that which the animal can assimilate from its food, the diet is insufficient, and loss of weight and starvation of some of the structures of the body soon occur. But a system of diet may vary much in the degree of its insufficiency. It may be so greatly defective as speedily to cause death, or so little defective that even after some weeks its effects are scarcely apparent.

Food inadequate in quantity or deficient in nutritive value develops very much the same effects; in both cases the body suffers for want of nourishment. The blood becomes thin and impoverished; weight and vigour are reduced; anæmic disorders, such as purpura, diarrhoea, diabetes, and dropsy occur; dysentery and tubercular complaints attack cattle and sheep; glanders and farcy supervene in horses. Death in all the higher animals occurs when starvation takes two-fifths from the standard weight. Food deficient in quantity or nutritive value sometimes acts as the exciting and sometimes as the predisposing cause of disease. Such errors are always most serious and rapid in their effects on young and delicate subjects, and on those that have been unused to such privations. Herbivorous animals, being in the habit of eating more frequently than carnivora, sooner suffer from fasting.

In no class of animals does faulty nutrition produce more certain and speedy results than in young calves. They rapidly lose that youthful bloom and calves' flesh which it is such wretched economy to waste; they become tuckered up and pot-

bellied; their skin is dry, adherent to their ribs, and often infested with vermin; they purge, and are with difficulty saved from diarrhoea, dysentery, enteritis, or tubercular disease. If good beasts are to be economically reared, and brought to that early maturity which yields the best return to the farmer, they must have the lion's share of their mothers' milk, unskimmed and unsophisticated, for at least four months, and after that receive a liberal supply of skimmed milk with boiled linseed, linseed-cake, grass, hay, and a few stoned roots. Considering the recent prices of well-reared young cattle, we doubt whether butter or cheese making can pay better than the liberal rearing of good young stock. With proper management, at twelve, eighteen, or even twenty-four months old, they may be made to pay twenty shillings per month for their livelihood.

Although nutrition has been impaired, and the vital powers depressed by faulty feeding, no notable symptoms may at the time be manifest, and the enormity of the injury may only be realized some weeks later, when the animal is exposed to a change of diet, colder weather, harder work, or other such trying conditions. Ample illustration of this occurs every winter. Lambs and calves are kept for a few weeks too long on the scant autumn pastures, when the grass has lost its nutritive qualities; when the nights get long and cold, their thriving is checked; although more nourishment is required than has been afforded throughout the summer, considerably less is actually obtained. The stock-owner by-and-bye notices that his animals are sinking; they are transferred to winter fare and winter quarters, and again have full supplies of fitting food; but the change often comes too late; the blood and soft solids have been starved, and do not easily regain their tone; from the slightest of causes diarrhoea is set up; in popular phrase, the animal runs out; and often sinks in spite of the best-derived treatment. From similar faulty nutrition, quarter-evil in cattle and sheep is likewise produced. In many of the grass counties of England and Ireland, and especially in a good grass season, thousands of lambs and hundreds of young cattle thus perish during the early part of the winter from their being indifferently nourished in the autumn. A few peas or beans, or a little cake given on the grass, and begun in August or September, effectually prevents this serious mortality.—*North British Agriculturist.*

THE AGRICULTURE OF NORTHUMBERLAND.

At a recent meeting of the Chemico-Agricultural Society of Ulster, Mr. Robertson read the following paper.—The area of this county is 1,949,299 acres; of this area 329,824 acres are under permanent pasture, 327,165 acres, or 26.2 per cent., under arable cultivation. The remainder, 592,310 acres, nearly 48 per cent. of the whole area, consists of mountains, land under water, roads, land occupied by towns, &c. The soils under arable culture consist generally of a strong tenacious loam. Between Newcastle and Morpeth it is of much heavier and less productive character than further north and west. In the northern extremity, and in the west round Wales, it is lighter and more suited to barley and turnip cultivation. Last year there were 153,716 acres under cereal and leguminous crops, 86,966 acres under clovers, ryegrass, and clover, 65,145 acres under green crops, and 21,338 acres under bare fallow. The following are the details of the area under grain and root crops:

Grain Crops.		Green Crops.	
	Acres.		Acres.
Wheat ...	30,814	Turnips ...	52,026
Barley ...	32,159	Potatoes ...	5,055
Oats ...	72,636	Mangolds ...	236
Beans ...	6,419	Carrots ...	23
Peas ...	5,428	Cabbages ...	1,682
Rye ...	260	Vetches ...	6,124
	153,716		65,145

The climate is subject to great changes, owing to its position between the German Ocean and the hills of Cumberland and Westmorland. The rainfall averages about 35 inches per

annum. The tenure under which the land is held is generally leasehold, nineteen or twenty-one years being the common duration of a lease. In some of the leases the tenant stipulates to follow a prescribed system of cultivation; but the majority of them only contain covenants prescribing the cultivation to be adopted during the last three or four years of the lease. The landlord erects, and generally keeps in repair, all buildings, the tenant generally doing all the necessary cartage. Over the greatest portion of the county the landlord does all the drainage, charging the tenant 5 or 6 per cent. on the outlay. Thus, the Duke of Northumberland drains to any extent at 5 per cent. on the outlay; the tenant performs all cartage; the tiles are charged at cost price at the kiln. The Duke of Portland does the same; so also do Lord Grey and many of the principal landowners. Lord Vernon has drained his tenants' land free of all cost. Professor Wilson says that the late Duke of Northumberland laid out between the years 1847 and 1863 £524,007 16s. 10d. on agricultural improvements on his Northumberland property, nearly £200,000 of this sum being for drainage. Sir Walter Trevelyan, who holds a valuable property in the west of Northumberland, has laid out £30,000 on drainage, &c., on this property, and increased his rent-roll from £9,000 a year in 1845 to £15,000 a year in 1863. This is not a bad increase—£6,000 a year—by the expenditure of £30,000 on drainage. Game is rather heavily preserved on one or two properties, but over the greatest portion of the county farmers have little to complain of in this respect. On many estates tenants are allowed to kill rabbits and course hares in proper season, and in some instances the tenants are offered the shooting at a charge of 2d.

or 3d. per acre. The rents vary greatly. Over the northern part a good many farms are let, tithe free, at 45s. per acre; on the east coast 35s. to 40s. are paid; on the northern banks of the Tyne the rent varies from 30s. to 40s. per acre, and in the central districts from 20s. to 28s. per acre. The grazings on the mountains on the west side let for 2s. or 3s. per acre, according to quality. The labourers are well paid in this county, the average of the county being 14s. or 15s. per week, with cottage and garden free, and in many instances coals in addition. In the neighbourhood of Newcastle and the larger towns wages range as high as 18s. per week, with the other allowances before alluded to. In some districts the labourers are paid in farm produce. The following is the allowance on a Northumberland farm: 42 bush. of oats, 24 bush. of barley, 12 bushels of beans and peas, 3 bushels of wheat, 12 pounds of wool, a quarter acre of potato ground, summer and winter keep of a cow, or £10 in cash; cottage and garden free, coals carted, £4 in cash. These farm labourers are generally bound to keep a strong female or boy, who is to work on the farm when required, at 10d. or 1s. per day. Young men frequently reside in the farm-house, and are paid from £20 to £25 per annum. A considerable area of the grain crop is still secured with the aid of Irish labourers. These Irish reapers are highly valued by the Northumberland farmer. He finds them steady, willing labourers, and would not willingly be without them. True, many farmers now make such free use of machines, &c., for harvesting and securing their grain crops, that they can almost secure their harvest without calling in extra hands; still, it will be some considerable period before the Northumbrian farmer can altogether dispense with the assistance of the Irish labourers. His harvests are late, and he cannot, like his south-country brethren, wait for favourable weather, but is often obliged to proceed with his harvest operations under circumstances quite unsuited to the employment of machinery. The Irish labourers generally come over in time for the hay harvest, and during the interval between the hay and corn harvest, are employed amongst the turnips. Few Northumbrian farms are without a thrashing machine. They are generally driven by horse-power; however, no inconsiderable proportion of them are driven by steam, tall chimneys being quite a feature in Northumberland. Occasionally water is employed as the motive power. Economical as this power is, it is far from being generally employed; even under favourable circumstances I have known steam preferred. The rotation common to Northumberland is a five-course: 1, turnips; 2, barley or wheat; 3, ryegrass and clover (mown); 4, ditto (grazed); 5, oats. Some of the best farmers have given up this two years under grass, and made a four-course rotation, as they find the land gets foul when kept two years under grass. Since this four-course system has been adopted, a difficulty has been experienced in getting a good clover plant. To obviate this difficulty, in the third year many only seed one-half under clover, sowing the other half with beans or peas. These, though belonging to the same family as the clover, are found sufficient change to enable the farmer to grow clover successfully once in eight years. Northumbrian farmers are generally careful of the field-yard manure. It is generally applied to the turnip crop, at the rate of 20 or 25 tons per acre; this, with two or three cwt. of superphosphate and 1 cwt. of guano, enabling them to grow crops of Swedish turnips not excelled in any part of England. This manuring suffices for the rotation, though a dressing of two or three cwt. of salt, with one cwt. of nitrate of soda, is not unfrequently applied to the clovers in spring. Lime is largely employed in Northumberland on the heavy soils. As much as seven or eight tons is not unfrequently applied at once. This dressing is generally understood to serve out a lease of nineteen or twenty-one years. In the north-west portion of the county the sheep stock consists of Cheviots or black-faces. In other parts of the county the half-breeds prevail: these are the progeny of Cheviot ewes, when tupped with Leicester rams. In other parts of the county flocks of pure Leicesters may be met with. On all the high-lying farms the pure Cheviot is preferred, strains of Leicester blood being found to render the animals unable to bear the inclement weather frequently experienced in winter amongst the hills. The Cheviot sheep are light and active, and well suited for the range of hills they inhabit. The ewes generally commence to breed when three years old; at six or seven they are drafted out of the breeding flocks, and sold to lowland farmers for fattening. The lambs are gene-

rally separated from their mothers in July, and taken for four or five weeks to hills containing a good deal of black heath, it being considered that this system of hardening the lambs is beneficial to them in after-life. The management of the half-breeds and Leicesters is much the same as the system adopted in other parts of England. A good many calves are reared in Northumberland: one cow is supposed to rear three calves. These animals are kept by the farmers until two or three years old, by which time they are fattened for the butchers, and sold at prices varying from £18 to £25. A great many Irish cattle are now fed in Northumberland. They are becoming more valued every year, and are gradually displacing Shorthorns and Kyloes in the byres of Northumbrian farmers.

BANBURY HORSE SHOW.

The Banbury Horse Show was held on Monday, January 20th. The judges were Mr. Harrison of Birmingham, Mr. Lepper of Aylesbury, and Mr. Reeves of Wroughton, and their awards were as follows:

Cart stallions above four years old, a piece of plate value £10, T. Berridge, Pimlico Farm, Croughton.

Cart mares above four years old, a piece of plate value £5, No award—no merit.

Cart colts under four years old, a piece of plate value £5, T. Atwood, Leekhamstead. Commended, Executors of the late B. Page, North Newington.

Cart fillies under four years old, a piece of plate value £5, W. Fairbrother, Burton Dassett.

Cart colts or fillies under two years old, a piece of plate value £5, E. Hiron, Sen., Chalcombe.

Hunters under eight years old that never won a first prize at Banbury, first prize, a piece of plate value £10, W. Gulliver, Swalecliffe; second, £5, S. Berridge, Drayton.

Hackneys not exceeding 15½ hands high, a piece of plate value £5, T. Horwood.

The dinner took place at the Red Lion Hotel, under the presidency of the Mayor, when the judges spoke to the merits of the hunters and the prize hack mares.

ESSEX AGRICULTURAL SOCIETY.—The annual meeting of this society was held last month at Chelmsford, Sir T. B. Western, Bart., in the chair. The report of the committee stated that during the ten years of its existence the society had been enabled to distribute no less than £5,674 in prizes for the promotion of improved breeds of horses, cattle, sheep, and pigs. Additional shedding had been purchased, making 1,900 feet now owned by the society, and a balance of £415 now remained in the hands of the treasurer. The total sum awarded at the show held during the summer of 1887 at Braintree was £662, of which £75 was contributed by the town of Braintree for special prizes. The money taken for admission to the show was £340. During the past year 50 new members had been added to the society, and in the corresponding period 38 members had been lost by deaths, removals from the county, and withdrawals. The Committee recommended Chelmsford as the place of the Society's exhibition for 1888. The report was adopted; and, on the motion of Mr. Perry Watlington, Sir C. C. Smith was elected President for 1888. The Committee was appointed as follows: Northern division, Mr. G. D. Badham, Mr. W. P. Boghurst, Mr. E. Catchpool, Mr. J. Clayden, Mr. J. Smith, jun., Mr. A. Hampson, Mr. J. Piggot, Mr. P. Portway, Mr. D. Sewell, Mr. W. Thompson, jun., Mr. F. Whitlock, and Mr. C. Wood; southern division, Mr. C. Barnard, Mr. W. Bolcher, Mr. J. Christy, jun., Mr. D. Christy, Mr. O. Copland, Mr. T. Kemble, Mr. T. C. C. Marsh, Mr. T. Mashiter, Mr. J. O. Parker, Mr. J. Pertwee, Mr. C. Sturgeon, and Mr. W. Swodes. A vote of thanks was passed to the retiring president (Mr. O. S. Onley); and it was agreed that £250 of the balance in the hands of the treasurer should be invested in Consols. Four new members were elected; and the proceedings terminated.

THE HEREFORDSHIRE CHAMBER OF AGRICULTURE.

At the adjourned meeting of this Chamber, Mr. Duckham, President, in the chair, Mr. VAUGHAN, who at the previous meeting read a paper on the "Education of the Labouring Classes," said that as no other gentleman rose to propose a resolution, he would submit for the approval of the Chamber the draft which had been drawn up at the last meeting: "That, in the opinion of this Chamber, elementary education should be provided throughout the kingdom for children under 12 years of age, and that the same should be aided by the State, but under no consideration should an increased burden be placed upon the local ratepayers."

No amendment was proposed, and the resolution was therefore carried.

THE WORKING OF THE HIGHWAY ACT.—This was the next subject appointed for discussion. In introducing it, the Chairman read a letter from the Secretary of the Worcestershire Chamber of Agriculture, to the effect that a strong feeling existed in that and several adjoining counties in reference to the Bill of Mr. Knatchbull-Hugessen, M.P., now before the House of Commons, to abolish turnpike trusts, and "to transfer the maintenance of the turnpike roads to the already overburdened ratepayers of the country." Accompanying this letter was a petition against the measure, based upon the following objections, and the Secretary expressed a hope that the Herefordshire Chamber would at once take some action in the matter:—

1. That the title does not truly set forth the object of the Bill, which is not to amend, but to abolish trusts.
2. That the preamble is by no means generally admitted.
3. That rate-payers and toll-payers are not identical. Tolls are approximately proportioned to the use of roads, but rates are not.
4. That, if the roads be repaired entirely by rate, a large amount of property and many of the great users of roads will escape the burden altogether.
5. That three-and-a-half millions of debt will be primarily charged upon the already-overburdened rateable property of the country. That it is eminently unjust to charge the repair of the great arterial highways, hitherto borne by the public at large, upon the limited area of the poor-rate; inasmuch as the fund-holder, the capitalist, and others forming more than half the aggregate income of the whole country, would at once escape this onerous and national duty.
6. That the highway rates of the country will be nearly doubled if the million a year now raised by tolls be added to them, which must be the case if the Bill passes.
7. That the few occasional hardships now existing under the turnpike system may be easily removed, and do not justify a change which will throw the repairs of the chief roads upon the rates.

The CHAIRMAN, having explained that he had not been able to prevail upon any one to introduce the subject, said that although Mr. Hugessen's Bill was not exactly the subject appointed for discussion, yet it must be looked upon as a matter requiring very serious consideration. With regard to the Highway Act, his own opinion was that where the practical element was brought to bear by the Board in carrying it out, it was a very valuable Act to the nation. He was aware that in many districts there had been an increased expenditure; but he had always been a lover of good roads, believing that the saving resulting therefrom in the wear and tear of machinery, carts, waggons, &c., and horseflesh was much greater than people generally imagined. But, although he admired the Act, where the practical element was brought to bear in carrying it out, there was, in his opinion, one weak point in it, and that was the increased power which it gave to magistrates. With all due respect to magistrates—a body to which they were frequently so much indebted—he could not but remember that they were an irresponsible body, and he looked upon their position as *ex officio* members of Highway Boards as an encroachment upon the liberties of the ratepayers (Hear, hear). Having gone into some details, illustrating this point, the Chairman expressed his disapproval of the condition requiring the

accounts of a surveyor to be sanctioned by magistrates, although they might have been approved by the ratepayers; and he then gave some statistics bearing upon the expense of maintaining the turnpike-roads and highways in the Ross district. For the three years (1861, '62, and '63) preceding the adoption of the Highway Act the average expenditure on the highways (92m. 7 fur.) was £2,342. In 1864—the roads in many instances having been left in a bad state—the call under the Act was £3,260, or £920 (in round numbers) above the annual expenditure of the three preceding years. In 1865 the call was £3,030; in 1866, £2,505; in 1867, £3,421. From these figures the Chairman argued that a good system of management had been carried out, and that the ratepayers had nothing to fear, but, as travellers, a good deal to gain in having the advantage of good roads. Turning to the expenditure on the turnpike roads in the Ross Trust, the Chairman showed that (excluding interest) it was in 1862 £28 16s., and in 1866 £31 8s. 1d. per mile on 37½ miles. The increased annual expenditure of 1866, as compared with 1862, was £97 4s. 10d., or nearly 10 per cent.; but as there had been a reduction of salaries to the amount of £30 6s. 6d., the actual increased expenditure was £127 11s. 4d., or nearly 13 per cent. Having commented on these statistics, and contended that they disproved an argument used by Sir George Jenkinson at the Central Chamber, that the extension of railways had diverted the traffic from the main turnpike-roads, and that therefore the cost of maintenance would be less every year, the Chairman said that the question came to this—Were they prepared to submit passively to the infliction of their highway-rate being doubled? He had made a calculation as to himself, and he found that if the maintenance of the turnpike-roads were thrown upon the ratepayers it would make a difference of some £12 a-year to him; and as he felt that he could not afford to bear that additional burden, he made a dead stand against it.

Mr. HERBERT asked why toll-gates should be done away with?

Mr. VAUGHAN: The Act which brought them into existence has ceased to exist, and they are now only made legal by the Continuation Act.

Mr. HERBERT: But why should not an Act be passed to continue them? The men who use the roads do not object to pay.

Mr. H. GIBBONS argued that it would be very unfair to charge the maintenance of the turnpike-roads on the ratepayers. Of late everything had tended to increase the rates, and he had no doubt that the alterations which had been made in the law as to the relief of the poor would still further tend to increase the burden. Everybody seemed to have come to the conclusion that tolls were an abominable nuisance, but when the roads had to be repaired out of the rates a considerable burden would be put upon the ratepayers, and they would think that a still greater nuisance. Then many persons would have to pay heavily who would scarcely ever use the roads. Timber and other things would be hauled along the roads from the estates of large proprietors, and the roads would be much cut up, thus affording fair reason for grumbling to smaller ratepayers who would have to contribute towards the maintenance of the roads, although they might scarcely ever use them. He agreed with the petition that some national provision should be made for the repair of the main arteries.

Mr. HERBERT repeated that he could not see why turnpikes should be done away with.

Mr. GIBBONS: Well, it has become a very fashionable thing for everybody to have a kick at turnpike-tolls.

Mr. HERBERT: I think we should stick to an old friend until we can get a better.

Mr. DOWNING: It is an expensive way of collecting money.

Mr. HERBERT said he was not persuaded that it was not the cheapest way which could be devised. He doubted whether any other machinery would not be quite as expensive and attended by as many difficulties; for there were people who would always grumble.

Mr. DOWNING considered turnpikes to be a great nuisance, and did not like them; but he did not quite see how they were to be done away with.

The CHAIRMAN again briefly addressed the meeting; and, in the course of his remarks bearing on the question of increased burdens being thrown on the ratepayers, he referred to the proposed new lunatic asylum. Some years ago, he said, a very large sum was expended in building an asylum at Abergavenny. Now, a separation had taken place between the uniting counties: and Herefordshire would have to spend a large sum—perhaps £40,000 or £50,000—to provide another asylum. Radnorshire, it was said, was going to join with Herefordshire; but that county now said "No."

Mr. HERBERT: And who has had the responsibility of doing this?

The CHAIRMAN: The County Quarter-Sessions—a non-responsible body. It would have the effect of considerably increasing the county-rates; and he thought the time had arrived when they should look to their own pockets, and see if they could not find a remedy. He suggested that, as the subject which had been discussed was a very important one, it would be better to defer coming to a decision until a future meeting; and it was agreed to adjourn for a fortnight, Mr. PARAMORE recommending that some means should be adopted to inform members of the object of the meeting, so as to secure an attendance.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The February monthly meeting of the Directors was held in their chambers, No. 3, George IV. Bridge.—Mr. CAMPBELL SWINTON, of Kimmerghame, in the chair.

The SECRETARY reported that, in accordance with the resolution of the last general meeting of the society, he had made the necessary application to Government in regard to the endowment of the Chair of Agriculture in the University of Edinburgh; that a deputation had afterwards waited on Mr. Hunt, M.P., the Financial Secretary of the Treasury, on the subject, and that a letter had since been received from Mr. Hunt stating that the Lords Commissioners of Her Majesty's Treasury will be prepared to place upon the estimates for the ensuing year the sum of £150, for the endowment of the Chair of Agriculture, to meet a like sum to be contributed by the Highland Society, and that should Parliament assent to the grant of the money, their Lordships propose to ask the House of Commons for a similar grant so long as an equivalent sum is contributed by the Society, and so long as the value set by students upon the lectures to be delivered, as evidenced by the attendance at them, shall be such as to justify their Lordships in taking such a course.

A letter was read from Dr. J. G. Fleming, President of the Faculty of Physicians and Surgeons of Glasgow, pointing out that, as the draft charter for a Royal Veterinary College for Scotland at present stands, it is not proposed to have representatives from that corporation as trustees, and trusting that the directors of the Highland Society would see the propriety of placing the faculty on an equal footing with the Edinburgh medical corporations.

Mr. HOZIER, jun., of Mandale, supported the application, and the directors instructed the secretary to inform Dr. Fleming that they considered it fair that the Glasgow Faculty should have one representative or two, if the other promoters of the charter did not object.

Monday, Tuesday, and Wednesday, the 16th, 17th, and 18th March, were announced as the days of examination for the society's agricultural certificate and diploma, candidates being required to lodge intimation of their intention to come forward on or before the 2nd of March.

The SECRETARY reported that Sir James Elphinstone and Mr. Caird, along with himself, had represented the society at the Conference on Technical Education, held in London on the 23rd and 24th day of January, and he laid on the table the resolutions adopted on the occasion, which have already appeared in the newspapers.

At the request of the Council of the Society for the Encouragement of Arts, London, the secretary was instructed to give his aid in promoting the objects of the conference, by serving on the Standing Committee appointed to give effect to the resolutions referred to, on the understanding that he is not required to attend meetings which may interfere with his other engagements.

The names of the following gentlemen were placed on the standing committees for the current year:

1. *Argyll Naval Fund*.—Admiral Sir William Hope Johnston, K.C.B., convener; Admiral William Ramsay, C.B.; Messrs. Walker of Bowland, Graham Binny, and Hew Crichton.

2. *Chemistry*.—Professor Anderson, convener; Sir Thomas Buchan Hepburn, Bart.; Professors Playfair, C.B., Allman,

Balfour, and Wilson; Messrs. Stephens, Redbrae; Russell, Pilmuir; Harvey, Whittingham Mains; Melvin, Bonnington; Gibson, Woolmet; Scot Skirving, Camptoun; Dudgeon of Cargen; Goodlet, Bolshan; Park, Stonehill; Hope, Fentonbarns; and Gray, Southfield.

3. *Collages*.—Mr. Maxwell Inglis, of Logan Bank, convener; Messrs. Mackenzie of Dolphinton, Campbell Swinton of Kimmerghame, and Trotter of Bilton Lodge.

4. *District Shows*.—Mr. Campbell Swinton of Kimmerghame, convener; Sir Thomas Buchan Hepburn, Bart.; Messrs. Newton of Castlandhill, Stirling of Kippendavie, Walker of Bowland, Ord of Muirhouselaw, M'Dougal, of Granton Mains, and Mylne of Niddrie Mains.

5. *Finance*.—Mr. Murray of Dolerie, convener; the Right Hon. Sir William Gibson-Craig, Bart.; Messrs. Mackenzie of Dolphinton, Walker of Bowland, Stirling of Kippendavie, Graham Binny, Hew Crichton, Trotter, Bilton Lodge; and Kenneth Mackenzie, C.A.

6. *General Shows*.—Mr. Kinloch, jr., of Gilmerton, convener; Sir James Gardiner Baird, Bart.; Professor Macquorn Rankine; Messrs. Gibson, Woolmet; Harvey, Whittingham Mains; Curror, Comiston; Hope, Duddingston; Goodlet, Bolshan; Swinton of Kimmerghame; Prentice of Strathore; Gray, Southfield; Hope, Fentonbarns; Walker of Bowland, Mylne, Niddrie Mains; M'Dougal, Granton Mains; and Trotter, Bilton Lodge.

7. *Houses and Buildings*.—Mr. Mackenzie, of Dolphinton, convener; Sir James Gardiner Baird, Bart.; Messrs. Murray of Dolerie, Walker of Bowland, Heddle of Melsetter, and Graham, Binny.

8. *Machinery*.—Mr. Gibson, Woolmet, convener; Sir Thomas Buchan Hepburn, Bart.; Professor Macquorn Rankine; Messrs. Hope, Fentonbarns; Stephens, Redbrae; Sadler, Ferrygate; Wilson, Wester Cowden; Park, Stonehill; Russell, Pilmuir; and Mylne, Niddrie Mains.

9. *Premiums for Reports on the Science and Practice of Agriculture*.—Professor Lyon Playfair, C.B., convener; Professors Balfour, Allman, Anderson, Wilson; Messrs. Irvine of Drum, Hutchison of Carlowie, Gibson, Woolmet; and all the directors.

10. *Premiums for Reports on Woods and Plantations*.—Professor Balfour, convener; Messrs. Walker of Bowland, Irvine of Drum, Dudgeon of Cargen, Newton of Castlandhill, Hutchison of Carlowie, and Lawson of Borthwick Hall.

11. *Publications*.—Mr. Irvine of Drum, convener; Professor Balfour; Messrs. Stephens, Redbrae; Russell, Pilmuir; Heddle of Melsetter, Walker of Bowland, and Newton, of Castlandhill.

12. *Veterinary College Examinations*.—Mr. Gillon, of Wallhouse, convener; Sir Alexander C. R. Gibson Maitland, Bart.; Professors Balfour, Allman, Anderson, Dr. Burt; Messrs. Campbell Swinton of Kimmerghame, Walker of Bowland, Kinloch, jr., of Gilmerton; Stephens, Redbrae; Gibson, Woolmet; Hope, Fentonbarns; Gray, Southfield; Wilson, Wester Cowden; Mylne, Niddrie Mains, and M'Dougal, Granton Mains.

The president, vice-presidents, treasurer, and honorary secretary are members *ex-officio* of all committees.

Letters were submitted from the clerk of supply for Kincardineshire, stating that the county had agreed to levy a

voluntary assessment towards the expenses of the Aberdeen show, and transmitting £140. This sum exceeds the subscription by the county in 1858; and some additional contributions, it is thought, will be still obtained. As already intimated, the counties of Aberdeen and Banff have also agreed to voluntary assessments to the amount of £490 and £130 respectively. The programme of the show, containing the premium-list and regulations as finally adjusted, were laid on the table; and it was stated that implements conveyed by goods' trains, and stock in waggons by goods' trains, would, if unsold, be returned from the show free by all the railways. The secretary mentioned that he intended to proceed to Aberdeen at the end of this week to inspect the ground for the show, previous to getting the plan of the yard made.

Sir THOMAS BUCHAN HEPBURN, Bart., reported, as convener of the committee recently appointed to consider the propriety of resuming the monthly meetings, first instituted by the society in 1841 for the discussion of agricultural subjects, that the committee had held a meeting yesterday, when it had been arranged that Professor Williams would deliver a lecture on Wednesday the 19th February, at two o'clock, on the causes of disease in the horse; that Dr. Anderson would give an address in March; and that Mr. McBride, Professor of Cattle Pathology to the Society, had undertaken to deliver a third lecture in April. The days of the meetings and the subjects to be discussed will be announced by advertisement in the newspapers, but no circulars are to be issued. Members are to have the privilege of introducing their friends to the lectures.

The SECRETARY read the following letter from the Marquis of Tweeddale: "Yester, 3rd February, 1868.

"Dear Mr. Menzies,—I have given a good deal of attention

to the best means of coming to a satisfactory conclusion in regard to the question we are endeavouring to solve, which I consider requires a public and practical solution—that is, the comparative value of steam and horse power in cultivating the land.

"We have endeavoured by a series of queries to gain the information required from manufacturers of steam apparatus and farmers, both in England and Scotland, as a preliminary step towards gaining our object.

"It appears to me that a sufficient time has been allowed for that purpose, and now I would propose that a competition should take place in the same field between the steam plough and horse plough.

"I have a field of clay-land which has been drained at 15 feet apart, and has never been ploughed above 8 inches, most probably 7 inches, which I have lately taken into my own hands. This field will be ready for cross ploughing about the middle of March, when a trial could take place. I will produce seventeen pairs of horses to work against the steam-plough, so that it cannot be said the horses have been picked, as that is the number of pairs I have at work. As steam cultivation is stated to be the new means of breaking up the soil, I say that 12 inches is the depth that I will fix for the trial. I beg you will lay my proposition before the monthly court of directors.—Believe me, yours truly, (Signed)

"TWEEDDALE."

The board instructed the secretary to thank the Marquis for his proposal, and remitted the letter to the Special Committee on Steam Cultivation, with power to make the necessary arrangements for the trial—the committee to report to next board meeting what sum they consider would be required for expenses.

CENTRAL FARMERS' CLUB.

THE SALE AND TRANSIT OF HOME AND FOREIGN STOCK.

The first monthly meeting of the Farmers' Club for discussion in the present year was held on Monday evening, February 8, at the Club-house, Salisbury-square, and was very well attended. The subject fixed for consideration was "The Sale and Transit of Home and Foreign Stock," the introducer being Mr. Clare Sewell Read, M.P., chairman of the club. At Mr. Read's request the chair was occupied for the occasion by Mr. H. Trethewy.

The CHAIRMAN, in opening the proceedings, said it was not necessary to make any remarks; he would, therefore, at once call upon Mr. Read, to whom he was sure they all felt greatly indebted, to introduce the subject. They must all agree with him that the subject which Mr. Read had chosen was one of great importance, and that it was brought forward at just the right moment (Hear, hear).

Mr. READ, who was most cordially received, said: Gentlemen, those of you who were present at the annual dinner of the Club may happen to remember that in apologizing for having accepted the office of Chairman for the present year, I said it would be impossible for me properly to fulfil the duties of that office, in consequence of the enormous amount of business which I had on my hands. In order to show that I had nothing to do, I have undertaken to introduce the important topic on the card (laughter). But you should understand that I have fallen into a trap. I was requested by the Secretary to suggest a subject for discussion. I had not then the slightest idea that the suggester was expected to introduce what he suggested; but when I placed before the committee the question of "The sale and transit of home and foreign stock", I was told that it was a matter of course that I should introduce it, and that if I were not prepared to do so then, I must be by the 3rd of February, and I now crave your indulgence while I endeavour to perform my task (cheers). The subject on the card is short and simple, and it is also precise. It is so general, that it in-

cludes everything relating to the sale and transit of cattle: it is impossible, however, to embrace all or half that might crop out this evening. I will therefore trouble you with as few figures and statistics as possible, and try and stick to my text. I hope we shall not be led to enter on this occasion into any minute details, and shall bear in mind that what we have to do is, not to frame a Bill, and still less to pass an Act, but to discuss a general policy, and to suggest a broad basis and sound principles of action. Our Chairman has remarked that this is an important subject; and he has also justly said that we are discussing it at the right time. The cattle-plague has, happily, now left us for some months—we hope and trust never to return; and if we can by any possibility devise some good from that great evil—if we can keep our herds and flocks free from diseases which have devastated them for some years (I refer particularly to pleuro-pneumonia and foot-and-mouth disease)—we may, after all, have cause to bless the day when cattle-plague first visited our shores (Hear, hear). Now, you must be well aware that public opinion has changed on this subject; and not public opinion only, but that of farmers most emphatically and completely. If, four or five years ago, an angel had come down from Heaven and told us that, by simply stopping the traffic, we could get rid of almost all the diseases which had harassed us of late years, scarcely anybody, except one or two clever scientific men, would have believed it. What we wanted to convince us was illustrations, and we have had them in abundance. The cattle-plague restrictions have exterminated a great many other diseases besides rinderpest; and cattle of my own county have not been so healthy for the last fifteen or twenty years as they are now. Surely, then, gentlemen, this is the time—now that the iron is hot—to strike at the root of the evil, to endeavour to place foreign imports on a sound and reasonable footing, and, at the same time, to regulate the sale and transit of home stock.

This subject naturally divides itself under two heads, foreign and British, with the subdivision of fat and store stock.

FOREIGN STOCK.

I shall take the foreign stock first; for I apprehend that that question is more discussed, and better understood, than the other. I think we shall be pretty unanimous on that topic. I do not feel certain that we shall agree about the home restrictions (Hear, hear). There can be no doubt that the mismanagement of stock abroad has been such as, in some measure, to foster diseases. I don't think for one moment that foreign producers are indifferent to the evil; but the climate is, in many parts, uncongenial, and they have such vast tracts of unenclosed land, that the consequence is that they house their sheep and cattle for many months of the year in a manner that tends to foster disease. They also, in many cases, fatten cattle in distilleries, and keep them, as many persons keep their cows in London, in a very artificial state. Whatever may be the cause, we know full well that the continent of Europe has never been free from some plague or pest amongst cattle, which has invariably started in the east and rolled with a devastating tide towards the west. I don't wish for a moment to suppose that England has had no diseases of its own. We have had murrain and blackwater and quarter-evil ever since farming was first practised in this country; but the rinderpest, small-pox, pleuro-pneumonia, and foot-and-mouth disease are not, I contend, of British origin. Their advent was foretold; their origin has been traced, and bitter experience has shown how they may be combated, and at what cost they may be got rid of. What we want is, to see how we may be protected against them in future. Importing countries must necessarily be liable to the diseases, and great care is required to avoid them. Take, for instance, Norfolk and Wales: I have lived in both; you can, perhaps, form an idea of the amount of disease which has prevailed in the herds of those two districts. If there happen to be a disease in England, Scotland, Ireland, or Wales, it is sure sooner or later to find its way to Norfolk. When I was in South Wales in '50, no cases of pleuro-pneumonia or foot-and-mouth disease had occurred; and although Mr. Gladstone said in the House of Commons that he thought the cattle-plague was stopped by the limestone-hills—where they are I don't know (laughter)—it was kept out of that portion of the Principality, both now and 100 years ago, by the absence of imported stock and no through traffic. Now, gentlemen, I will take the smallest matter connected with this subject first, namely the stores. You were told by Lord Robert Montagu that these were never imported. The truth is, that in the returns there was no division of imported stock; but there were a great number of animals sent to England as fat cattle which were so exceedingly lean that they had to be re-grazed before they were fit for our market. A great number of farmers say that they don't want any foreign stores. I come from Norfolk, where 19 out of 20 cattle grazed are not bred in the county, and we farmers want cheap stores as much as anything; but then we must first be satisfied that the stores are sound. We have had no foreigners for two years, and our store stock has never been healthier or better. We look to Ireland, with its 3,700,000 head of cattle, and although it is impossible to give you any correct idea of the number of store cattle imported from Ireland to England, yet I may tell you that in the month of October last there were on Norwich-hill 5,280 steers that were from Ireland. My own experience of foreign stock commenced in 1858. I bought a great many, and although I got them very cheap, they proved in the end very dear. I lost no less than forty-two cattle by pleuro-pneumonia in 18 months. I happened about that

time to go over to Holland, whence my supply had come, and I discovered that those sensible people who live there, having little hay and plenty of pleuro-pneumonia, had kindly sent an unusual quantity more recently of their store stock to England (laughter). I have also had some little experience of the foreign sheep. When the cattle plague was so bad, I thought I would buy some foreigners, and fat them for market. They were very cheap, but they were so impregnated with scab that, notwithstanding continued dressing, I had to kill most of them at home, in order to prevent neighbours' animals from becoming infected. The Scotch tell us they like foreign stores, and Londoners say that they must have foreign cows. By all means let them; but we must have a few ports set apart for quarantine. I think those ports should be removed as far as possible from the ports at which fat cattle are imported, and if the great emporium for fat stock is London, I would have the stores at Harwich. As to the amount of quarantine which is required, that is a debatable question. It used to be said that 21 days was the proper period; now it is alleged that 14 days is sufficient, and I have heard advocates for 10 days. Supposing the period were made 14 days, I don't see how the expense could well be more than a pound per head. Lord Robert Montagu said that fat stock cost £5 a-head for 10 days' quarantine, and lost 40s. as well. They must then have been very much diseased, or badly treated in transit, and have been fed on something rather better than hay. I don't think that a moderate quarantine would exclude any really good stock. No doubt it would keep away the doubtful and the bad; but it need not keep out sound and healthy stores. So far as sheep are concerned, I think a very limited quarantine would suffice for them, provided they were properly dipped for the scab, which would entirely destroy all the seeds of cattle plague, which they might otherwise disseminate. Before proceeding to the question of foreign stock generally, I would remark that the salesmen and importers appear to me to have greatly overrated their case, and consequently damaged it. Instead of admitting that certain cattle diseases are indigenous to foreign countries, they tell us that Europe is always free from epidemics, and that it is British stock that is always unhealthy (laughter). I have heard it stated that rinderpest originated in the London cow-houses, and that pleuro-pneumonia was caused by the potato disease; and that foot-and-mouth disease originated with the east wind (laughter). It is a waste of time to contradict these foolish stories; they condemn themselves (Hear, hear). In order to make the story complete, the persons to whom I allude tell us that the sea voyage is rather pleasant than otherwise (laughter); that the transit is perfect; that everything is done to ensure the comfort and convenience of the cattle; that they are fed and watered at all practical times; that the ventilation for them is excellent; and that they are never overcrowded (laughter). I will not ask you to take the trouble to read through the evidence on this point given before the cattle-plague Commissioners, or that taken by the Committee of the House of Commons. I would generalise that evidence, and give you the result. What, then, I say, are the facts of the case? Although the ventilation may be very good at sea in most vessels, it is far from being good in the river. When vessels have reached the wharf, and have to lie by for a time, the ventilation is abominable. The cattle reach the port in Holland on Thursday, and get very little food there. They sail early the next morning, and arrive on Saturday. It is Sunday afternoon before they reach the lairs. No doubt cattle are much better treated now than they were formerly, being fed at the wharf; for they have a little hay, but it is very often wasted and trampled under their feet. The twelve hours' quarantine, which is practically six-

teen or twenty, is, I believe, very injurious to importers, while there is no practical benefit as regards the prevention of disease. We all know that a sea voyage is to us, who are accustomed to all sorts of locomotion, sometimes very unpleasant; that we are subject to nausea, misery, and sickness, although we may have a luxurious berth, and be surrounded by all possible comforts. The poor cattle, unhappily, cannot tell us their tale of woe; they would require a new language for that purpose. Their sufferings between Bremen and London have passed into a proverb. No farmer would be believed, and if one of us were to tell the tale, he would be suspected of wishing to bolster up a gigantic system of protection. The tale has, however, been powerfully told by one who was no sea-sick land-lubber, being no other than Mr. Macgregor, who went one thousand miles in a tiny canoe, and is the author of "Rob Roy in the Baltic." That gentleman says:—

"Oh, the roast beef of Old England! The sad twinges borne by that 'undercut' before we eat the airloin in London: the Slesvig thumps to drive it to a pen on the Weser, the German whacks to force it up a gangway on board, the haulings and shoves, the wrunchings of horns and screwing of tails to pack it in the hold of the steamer, the hot thirsty days and cold hungry nights of the passage, the filth, the odour, the feverish bellowing, and the low dying moan at each lurch of the sea—who can sum up these for one bullock's miseries? and there are thousands every day. Who dare tell them, or ought to tell them, unless these cruelties can be stopped, and these sufferings put an end to? But they can and they will be relieved, for good and wise men have taken this subject in hand. If a poor bullock becomes at all sea-sick, he speedily dies. If he is even weaker than his unhappy companions, and lies down after two days and nights of balancing on sloppy, slippery boards, he is trampled under the others' hoofs, and squeezed by their huge bodies, and suffocated by the pressure and foulness. Through the livelong night, while we christians on board are sleeping in our berths, these horrid scenes are enacted, and no one to see them. Morning comes, and the dead must be taken from the living. A great boom is rigged up, and as we lean over the rail to look on there is a chain let down, and the steam-winch winds and winds it tight and straining with some strong weight below, far, far down, in the lowest of the three tiers of *filet de beef*, where no light enters, and whence a stifling reeking comes. Slowly there comes up first the black, frowning, murdered head, and horns, and dull blue eyes and ghastly grinning face of a poor dead bullock, then his pendent legs and his huge long carcass. To see the owner's mark on his back they scrape away the slush and grime, then he is swung over the sea, and a stroke of the axe cuts the rope round his horns. Down with a splash falls the vast heavy carcass; and £20 worth of meat floats on a wave or two, then it is ingulfed. Another and another of twenty-two are thus hauled up, and cast into the sea, and this, too, on the *first day of a very calm passage*. What must it be in a storm?"

Well, gentlemen, I can tell you what cattle suffer in a storm. It so happens that in the autumn of 1863, while a very stiff gale was blowing off the east coast, though nothing like such a storm as we have had within the last day or two, there came two steamers, laden with cattle and sheep, into the port of Lowestoft. One of these vessels was the City of Norwich, the other was the Tonning. In the City of Norwich there had been 354 oxen, of which 179 were destroyed, and 460 sheep, of which 222 were dead; while out of 850 oxen in the Tonning 170 were destroyed. All the remaining animals were more or less injured and bruised. That case does not appear to be a very exceptional one. On taking up a number of the *Daily Telegraph* last October, this statement met my eye. In the City of Norwich, in the same vessel that I have already mentioned, 7 sheep had just died on the voyage; in the Troubadour, 24 sheep; in the Taurus, 2 oxen; in the Swan, from Bremen, 51 oxen and 20 sheep. It is added that one or two animals were constantly found

suffocated on arrival or thrown overboard during the voyage. A little variety is given to these details by the fact that in January the Moselle, from Antwerp, had 20 calves frozen to death. Now the Vice-President of the Council, Lord Robert Montagu, told us that meat is wanted in this country, and that to attempt to stop the importation of foreign stock was like attempting to "sweep back the tide with a broom." We do not want to take in hand that broom, but when such language is used, let us look at the increase which has taken place in the foreign trade. The imports of cattle before 1842 were very small, and in the first three years of free trade the imports averaged 8,000 oxen and 1,000 cows. In 1846 the imports were 17,000 oxen and 25,000 cows. In the next nine years the numbers rose from 27,000 to 63,000, while the cows dropped from 85,000 to 10,000. In 1856 the imports fell to 52,000 oxen and only 9,000 cows. From 1858 to 1863 the oxen advanced from 47,000 to 98,000, and the cows varied from 4,000 to 14,000. In 1864 oxen and cows increased to 231,000. Sheep advanced from 644 in 1842 to 230,000 in 1852: they fell to 141,000 in 1856, but rose to 430,000 in 1863, and to 496,000 in 1864. I will now give the official returns of the imports for the last three years. In 1865 the imports of cattle were 283,271, of sheep 914,170; in 1866 the imports of cattle were 237,739, of sheep 790,880; in 1867 the imports of cattle were 177,072, of sheep 532,569. This return thus shows a gradual decline, in spite of the enhanced prices, although foreign stock was less restricted than home cattle; while in the spring of 1866 it had a monopoly of the London market. Now what we want to be protected against is not meat, but disease (cheers). We farmers did not originate the idea of a separate market, and I believe that if it had been talked about among us four or five years ago it would have been generally scouted. It originated with a few scientific men, who preached about the necessity of having a separate market, unsuccessfully, for several years. There must, however, be a separate market for foreign stock (cheers). These must be slaughtered at the outports (Hear, hear). All other expedients would be but half-measures, and I believe they would be quite as hindering and quite as expensive to the foreigner as that which we propose. The Orders in Council are all very well, but we know that they may be revoked in a moment. What we want is a good general Act, and not to be left dependent on the whims and caprices of the Privy Council. You are all aware that the Government has introduced a Bill; it was certainly wrong from them, but nothing can be done in these days without pressure, and we must squeeze them a little more. That Bill is a very good one as far as it goes; it does us tardy justice, but it is not complete. It must include sheep and pigs, in order to be a really good measure of safety (cheers). Sheep especially may clearly carry the contagion of cattle plague, if they are not subject to it themselves; and I say that, in order that the measure may answer the purpose, it must be provided that all foreign stock shall be in one market. It would be well, I think, if the Government, after receiving all the information which it can obtain on the subject, were to name the market-day, so that the buyers could attend both markets. The report of the committee of 1866 says: "Although to some extent one class of butchers purchase foreign, and another class English fat cattle; yet there are many who purchase both. The separation of the markets would exclude these men from one or the other market." This supposes we are to have the same day for both markets; but if Monday and Friday were named for Islington, Wednesday might do for the foreign market, and the buyers could attend all. I think we ought also to insist on the speedy execution of the works. The question of the site for the foreign

market is a rather difficult one. The site must, however, be near the east end of London, and I think it ought to be on the north side of the Thames. There are, I believe, several good sites. I could point to two or three myself, and I think my friend Mr. Odams could tell us of another. As to the idea that if this foreign market is somewhere down in the region of Blackwall, people will not be able to bring the offal to the east end of London, it is preposterous and unbusiness-like. It seems to be forgotten by the practical men who raise this objection that tons and tons of offal came last year from Holland. Therefore, if we had a foreign market in the vicinity of Blackwall, there would be no difficulty with regard to offal. But we must brace ourselves up for a hard battle. There is the Corporation of the City of London against us; and we have also opposed to us the foreign salesmen and a great number of London butchers. The butchers are of course against us. They want things to remain as they are (laughter); they are perfectly satisfied with the entire command of the market, with having every bullock that comes to London within their grasp (Hear, hear). But it must be remembered that all the arguments which are used against our separation of the stock markets were formerly urged with still greater force against the removal of the live market from Smithfield to Islington (Hear, hear). I was talking in the last Christmas week to a very large importer, who was naturally opposed to this change, and he said to me that he would rather know the worst at once, and that he hoped what was done would be done at once and finally. "Let there be no more changes," he added, "and then the trade will rapidly adapt itself to the altered circumstances of the case" (Hear, hear). I need not waste your time, gentlemen, by dwelling on the benefits which would arise to the importers of cattle themselves from the proposed change. There need then be no quarantine, the cattle will go straight to the lairs of the foreign market, where they will recover from fatigue, and they need not be killed immediately. There will be a great saving of expense to importers; while there will be no necessity to take the cattle by rail to Islington, and drive them back for miles to Whitechapel, where most of them are now killed by carcass butchers. I am told that the railway and other charges for cattle are from 11s. to 13s. per head, and for sheep 1s. 9d. per head. I fancy that, by the proposed alteration, these expenses might be considerably reduced. The inspection of cattle brought from infected countries need not be so strict as it has been. Now, this is the only way in which the movement of home cattle brought to London can be made free. Even if you had an outside market for English stock, as some persons suggest should be the case; or if you had one market-day at Islington for English and another for foreign stock, as others have suggested, still London must be shut up for through traffic, the Brighton, Birmingham, and all country butchers must be excluded, and all calves must be killed there. I cannot believe the statement which has been going the round of the papers that one hundred and fifty cows produce five hundred calves in one year (laughter); but there are, I suppose, still a few London dairies in which calves are born. I believe that if the proposed change were made, the Islington market would soon recover itself as a vast emporium for home stock. I have made up my mind to send no more cattle to it as long as the present restrictions are enforced (Hear, hear). I have been told that it is my duty to say a word about the cow-houses and slaughter-shops. This is somewhat foreign to our discussion; but I hope I shall live to see the day when they will be banished from London. Lord Robert Montagu tells us that the home supply of cattle in Great Britain has reached its limits. On this subject, let me quote some statistics.

TOTAL NUMBER OF EACH KIND OF LIVE STOCK IN THE UNITED KINGDOM IN 1866 AND 1867.

		Great Britain.	Ireland.	U. Kingdom.
Cattle.....	1866	4,785,836	3,746,157	8,531,993
".....	1867	4,998,034	3,702,378	8,695,412
Sheep.....	1866	22,048,281	4,374,282	26,422,563
".....	1867	23,916,101	4,826,015	28,742,116
Pigs.....	1866	2,477,619	1,487,374	3,974,893
".....	1867	2,966,979	1,233,893	4,200,872

By stupidly taking the returns before and after the lambing season, it is stated that there are seven million more sheep in the country this year than there were last year. What do the wool manufacturers and buyers get by that? Seven million more sheep mean thirty million more pounds of wool in the country; and the supposed increase is used to keep down the price of home-grown wool. The imports of stock in the five years before the cattle-plague were 160,000 cattle, and 370,000 sheep. I will put twenty-five per cent. on cattle, and call it 200,000; and I will take the sheep in round numbers at 400,000. Now, contrast this with our 8,750,000 head of cattle and 34,000,000 sheep, and I think I am right in saying that the import of live stock did not amount to one-tenth of the home produce. That is the state of things even so far as mere numbers are concerned, to say nothing of quality and size. I see that some persons have estimated the value of our stock at from £150,000,000 to £200,000,000. As I have said, Lord Robert Montagu tells us that the supply of home cattle in Great Britain has reached its limits. Why, with no foreign store cattle to aid us, our cattle have in one year increased 163,000, and if the evils to which I have alluded are removed, the increase will no doubt continue. Then comes the question, Have more English cattle died than have been imported? Again, I cite the authority of the noble lord the Vice-President of the Council. The noble lord tells us that in the year 1860 370,000 died, half of them from pleuro-pneumonia. This, out of 8,000,000, is 1 in 22, which is certainly a very large number to have lost. Mr. Gamgee states that in 1862 the loss by pleuro-pneumonia was £2,000,000, or three times the value of the imports. But, supposing all this to be wrong, I contend that the fear and dread of disease increase our losses, retard the production of stock, and discourage farming. I contend that it is not to the high price that the farmer makes that we are to look, but to the profit which he gets (Hear, hear). *We had better by half have lower prices with a decent profit than high prices arising from disease.* If I am right in my view, plagues and epidemics introduced from abroad have reduced the supply of English stock. Thirty years ago it used to be considered that the loss on old cattle in this country was not more than one per cent., while the mortality among cows and young stock might be 2 or 3 per cent. Cattle were often choked and hoven, but seldom died from epidemics. Professor Gamgee says, that from 1½ to 2½ per cent. was the loss at that period. Let us take the foreign diseases—for I am sure they are foreign diseases—one after another, and contemplate their ravages in our home stock. First, we have the cattle plague. The official returns put the loss from that source at 279,000, and those killed healthy at 57,000, making together 336,000. I am convinced that the actual number of animals lost is much nearer 500,000 (Hear, hear). I have the authority of Professor Simonds for saying, that if all the cattle that died in Cheshire were returned, from 20,000 to 30,000 more would be added. But in addition to that we have had all sorts of hindrances and restrictions. People have been constantly telling us that the restrictions are visionary, while others have said that they do us good. What are the facts? Take the county of Norfolk. The Great Eastern Railway has several stations in Norfolk. I find the number of

store cattle that came to our county by rail was, in 1865, 38,000, and in 1866, 59,000; and now that we have recovered ourselves, we have got the usual complement of 67,000. Pleuro-pneumonia was introduced in 1842, and ever since we have suffered from it to a very great extent. Professor Gamgee has told us that it is a highly contagious fever, and says its ravages are well illustrated in the annals of defunct insurance associations. Well, now, I don't like referring to dead companies, because it is possible they killed themselves by taking a large number of excessive risks. But we have in Norwich one solvent company which has given me returns of the losses during the first and the last three years of its existence. In 1858, 1859, and 1860 the percentage of loss from pleuro-pneumonia was respectively 63½, 46, and 47 cattle. Now take the last three years—1865, 1866, and 1867. In those years the percentage of losses was 26, 1, and 8 respectively. I was told by the secretary of that company that last year, when we had the cattle plague restrictions, the disease almost entirely disappeared. There was then only 1 per cent. of losses; they are now increasing again. Foot and mouth disease, we were told by the noble lord the Vice-President of the Council, came from Holland in 1889, although he said cattle were prohibited till 1842. There was an importation of cattle before that year, and the epidemic did not come over in a box. Although foot-and-mouth disease is not in itself fatal, the losses from it are incalculable. The animals affected do not die, but if you buy a lot of animals that are suffering from it I am quite sure it will be a month before they get over it, and another month to bring them up to the condition in which they were on the day they were purchased. Therefore, when Professor Gamgee tells us that we have in some years lost £2,000,000, it may be assumed that if only half the cattle sold in one year had the disease, this is no unreasonable calculation. Some veterinary gentlemen say that this disease dies out in this country, but that fresh importations set it going again. Recent facts tend to support this theory. They also support the truth that the disease is contagious and infectious, and that it is not carried about by the atmosphere or generated by the east wind. When foot-and-mouth disease attacks a flock of ewes, you know disastrous consequences ensue. Now what are the faults of the home trade, and who are to blame for them? I am quite ready to admit that some farmers are ignorant, some are careless, and a few are mean. There is a still smaller number who are, I am afraid, so unprincipled that, if they get disease among their stock, they try to sell it. This is most culpable conduct. It is hard that a farmer who has got disease must keep it; but it is still harder upon 100 of his brother farmers who might buy his diseased cattle. (Hear, hear.) *A farmer's self-interest is his stock's protection*; and farm-buildings are now generally so good that, when proper care is taken, animals do not suffer from cold or exposure to weather. I believe we have to thank the railways and dealers for the greater part of the miseries which our cattle experience. As a matter of course, they get all they can, at the least expense; and any damage which may be sustained is almost sure to fall upon the buyer. A few months ago I read in the *Times* a letter from Mr. Harry Chester, of the Society of Arts, from which the following is an extract: "Young calves die by thousands, from the cruelties which are inflicted on them through the ignorance and prejudices of farmers." I wrote to that scientific gentleman, to ask him where he obtained his information; and he told me that his informant was Professor Gamgee. I attended the meeting of the Society of Arts, at which Mr. Gamgee spoke. I did not recollect any such statement; and, with all due deference

to Mr. Chester's memory, I have too good an opinion of Mr. Gamgee to believe that he could have stated what is so plainly untrue. What is the real state of the case? Why, dealers bring calves from long distances, keeping them for days without food. They then sell them to us; and they die after we have got them. We don't kill them; but they die in consequence of the previous treatment, and the deaths in some cases amount to 25 per cent. It has been suggested that dealers and drovers should be licensed, and that this would be a means of making them respectable. Horse-dealers have to take out a licence; but they are not all respectable (laughter), and it is quite possible that a licence would be equally ineffectual in the case of cattle dealers. An excise licence is granted to a horse dealer as a matter of course, but the excise-duty is no certificate of character, though it might be so if the licence were granted by some competent authority. If a drover ill-treats animals, or a dealer sells diseased stock, he would forfeit his licence, and that might be some protection.

TRANSIT OF FAT CATTLE.

As regards the transit of fat cattle, Mr. Waller, the secretary of the Cattle Defence Association, has drawn a graphic picture. He says: "In most cases, even when British bred, the ox is reared far away; he travels a long distance—partly on the dusty road, partly packed in a railway-truck; he passes the whole of Saturday and half the night either along the iron-road or shunted off on a siding; and often without tasting anything, not even water, for twenty to forty hours: he is crowded into the market-pens in the small hours of the morning. He is weakened by hunger and thirst, giddy with blows about the head where a wound is no damage to the hide, and his senses are wandering from the uproar and tumult which have surrounded him for days past." At Norwich station I have frequently seen cattle at nine or ten on Saturday morning, and they remain there until two, three, and four o'clock in the afternoon. (A voice: "Six o'clock.") Well, I have seen them at four. Notwithstanding the immense import of stock into Norwich, there is not a single drop of water at that station for cattle. It is said that there is a river within 800 yards of the station. Why, in like manner it may be said that there are plenty of bakers' shops at the east-end of London, but the people do not all get as much bread as they want. I trust that now that the chairman of the Eastern Counties' Railway is a nobleman of great ability and a man of business, that defect at all events will be remedied. At present the cattle remain without food or water till Sunday morning, and at ten or eleven o'clock they are placed in the lairs, of course in a fit condition for contracting any disease. The distance from Aberdeen to London is 550 miles. Mr. Tegg, the inspector of cattle at the Metropolitan Cattle Market, stated in '64 that cattle conveyed by the railway companies from Scotland leave there on Thursday and do not get to the lairs of the Metropolitan Cattle Market until Saturday, and he has every reason to believe that they have neither food nor water during the transit; and if there were any predisposing causes of disease this cruel treatment may well induce its appearance. Of course there is here more harm to the consumer than to the buyer. The animals are killed too soon to produce actual disease, but the meat must be less wholesome. Consumers in London talk a great deal about the bad quality of the meat which is grazed, and the amount of oilcake and other artificial foods used in fattening animals; but I believe that what I have mentioned has more to do with the defects in question than anything else. Now, in the case of store-stock transit, all these miseries are, of course, augmented. Store stock cannot stand heat, cold, and fasting so well as old fat cattle.

IRISH CATTLE.

If the English railways are bad, Irish are worse. Mr. Samuel Garnett, of Meath County, who feeds 800 head of cattle, said, in evidence, "that having tried conveyance by railway for some time, he had lately given it up altogether," adding "that he would rather walk cattle 70 or 80 miles than put them 'into trucks.'" "They are shunted so often," he says, "backwards and forwards, that they come off their journey in a very bad state, and if there is any disease going about they are sure to catch it." In busy seasons they are hurried to the sea-port. Hear another witness :—

"How are Irish cattle brought to this country? We may suppose a dealer has bought up a number of lots all in different places, which must reach a point for shipment at a given time. The lots which arrive the earliest may possibly get rest and refreshment; but for the remainder even water is out of the question. The poor brutes are hurried from the railway trucks to the steamer, to be thrust into the hold as fast as screwing of tails and thrashing can force them. Here, for 30 or 40 hours it may be, they are kept huddled together without food or drink, and almost without air to breathe. On landing they are driven from the steamer, or very likely hauled out by means of ropes, and hurried off to another station, again to be confined in trucks for a number of hours longer."

Now, I must say, in justice to the Irish Government, dealers, and inspectors, that I received quite a different account. A few days ago, the inspector at Liverpool wrote to me :—

"No cases of pleuro from Ireland for the last four months, stringent orders being issued to the Irish inspectors not to allow cattle suffering from that complaint to be shipped, and the inspectors here are instructed to destroy at once every case they find, and to prosecute the owners of the animals. The vessels the cattle come over in are well ventilated and commodious, and they are thoroughly disinfected each time a cargo is discharged; there is also sufficient space allotted to each animal."

But, Professor Fergusson writes to me from Dublin :

"In the holds ventilation is necessarily so defective that the animals are obliged to respire the same air, no matter how polluted."

"Thirty or forty hours" must refer to some southern port; perhaps Bristol. The time from Dublin to Holyhead is six to seven hours, to Liverpool about twelve. When the animals have reached Liverpool, they have four miles to walk to the Edge Hill Station. Norfolk cattle leave Dublin at 8 a.m. on Wednesday, and arrive at 2 p.m. on Friday, *via* Liverpool. They are fed and watered when they are landed, or at least they should be so; but I am told that many of them cannot eat when they land; and surely the change from the holds to the trucks—from suffocating heat to piercing cold, must be very detrimental to them. We should remember that cattle-trains are frequently shunted off for four or five hours, and the cattle left for all that time without food or water. I have known cases in which cattle have been left at Peterborough, and coals have been taken on in their stead. I have also heard of a trick of dealers in connection with this subject. I have heard that they like to keep cattle for a considerable time without water, and then just before bringing them into the market to give them a large quantity of drink, the consequence being that they sweat and steam and look so blooming and fall that the buyers will give more for them than they are really worth. No wonder that Irish cattle have pleuro-pneumonia, considering what I have mentioned. We shirk Irish stock, and the Irish farmers shirk our stock. They say that Ayrshire cows and English calves are more subject to pleuro-pneumonia, which shows that it is the miseries of their long journey which make them more liable to disease. Here is a case showing that such miseries as I have just referred to in connection with railways are not confined

to Ireland. "A lot of 21 bullocks forwarded by rail to Winchfield, in Hampshire, were four days and nights on the journey, in trucks, without food and water. Two out of the 21 died on the way." There is another instance which I can vouch for myself. Some cattle which came from Westmoreland to Norwich were 38 or 40 hours in the trucks. They arrived at four in the afternoon, and it happened that there was no drover to meet them. They were not fed or watered, and did not leave next day till eleven. They were driven 14 miles, and the result was that one or two died and the rest were very ill. The Society for the Prevention of Cruelty to Animals prosecuted the station master at Norwich for letting those bullocks remain from 4 o'clock in the afternoon until 11 o'clock the next day without giving them food or water. The magistrates convicted, but on appeal to quarter sessions the conviction was quashed on the ground that the railway company could not have made the owner of the cattle pay for any food and water which might have been given to them. If there is no remedy for such a case as that, there ought to be one (Hear, hear.) The transit from Scotland is still longer. The usual quick transit is 30 hours, but I was assured the other day by Mr. Stevenson, the superintendent of the Great Eastern Railway, that the cattle are frequently 60 hours without getting food or water (Hear, hear.)

LEGISLATIVE INQUIRIES.

Well, now, let me just take a hurried glance at the legislative inquiries relating to this subject. First, there was the Bill of 1848, which gave certain powers to the Queen in Council. In 1868 Mr. Holland introduced a Bill, which was withdrawn on a promise being given by the Government that they would take the matter up. In the following year Mr. Bruce introduced the Cattle Diseases Prevention and the Importation Bills, which were referred to a committee. Then we had the Cattle Plague Bill and the Trade in Animals Committee of 1866; and, lastly, the Contagious Diseases Bill of 1867. I consider that the most important inquiry that we have had on the subject is the Cattle Plague Commission. We were greatly laughed at at the time when the first report was made. I remember that the writer of an article in a leading agricultural paper began by saying that the majority in the cattle plague commission were a complete minority in the country. As I did not happen to be in the majority, but in the minority on the Commission, I did not object to that. I thought the majority were theoretically right, but practically wrong. I remember hearing that at a consultation of doctors, as to the best means of getting rid of the cholera, it was suggested that the best mode of doing that was to kill all the cholera patients (laughter). In the case of the cattle plague commission the majority recommended keeping the whole of the cattle where they were for three months, but we were unanimous in suggesting the alternative of stamping out the cattle plague, by a destruction of all the animals that were likely to spread the disease. It was not till this alternative was embodied in an Act of Parliament that the plague was stayed. The second report of the Commission said that there must be a separate market for foreign cattle. You must remember that in this case we had no constituents to please, no Government or party to defend, but simply to make suggestions for the improvement of the sale and transit of home stock.

THE SALE OF HOME CATTLE.

In making a few suggestions for improving the sale of home cattle, I propose, if possible, to have separate markets for store and fat stock, especially in London. I should like, for instance, all stock that come to London to be marked for slaughter, and when they

were removed beyond the metropolis not to be driven through the streets, but conveyed by rail. I should like, too, to see carried out in every case the orders put in force for the licensing of fairs and markets. One effect of this might be to shut up two or three little fairs, but so much the better. Two or three trumpery fairs, where a dozen or two half-starved cattle are sold, may be the means of spreading infections far and wide. Again, I would say, let the local authorities appoint inspectors. Let there be a thorough inspection of all fairs and markets by competent persons; those who have time or talent for the work. I know I have said some rather hard things about veterinary inspectors. I have heard it remarked that they are all, more or less, ignorant. I do not say so. I say that the way in which the veterinary profession treated the cattle plague was sound and good. It would have been rank and arrant quackery on their part to have told you that they could cure the disease (Hear, hear). They confessed their ignorance; they told you what to do; and it was when the opinion of leading veterinarians was carried out that we got rid of the disease. I contend that if a man is armed with proper powers of inspection the dread of detection will keep away a great deal of sickly stock. The inspection at the outports, although there have been losses, has proved of a great deal of use. No doubt it kept the cattle-plague away from us for a long time. In many cases, however, the inspection was very loose. I remember that at Harwich the work of inspection was carried on by an old cow-leech, with a candle and lantern. Diseased stock have been detained and slaughtered at the London wharves. From 1859 to 1863, 4,640 cattle, 380 calves, 7,180 sheep, and 4,657 pigs were thus dealt with. Now, what diseases would you exclude from our markets? What diseased stock should not be allowed to be moved by rail or road? (A voice: "None.") Well, I had put that word down myself. I do not doubt that we shall all agree that cattle-plague, glanders, pleuro-pneumonia, small-pox, and scab, should be excluded from all markets, and not allowed to move, either by rail or by road. The case is more questionable as regards foot-and-mouth disease and foot-rot in sheep. Foot-and-mouth disease is so rapid in its germination, not being more than two days in developing, that it would be rank folly and absurdity to say that you would slaughter stock that were infected with it during transit, and not allow them to proceed to their destination. I would have all diseased animals excluded from *store markets*—contracted or developed on the journey. But cattle suffering from this epidemic might go into a *fat* market, and, provided they went straight to the slaughter-house, no great detriment would arise. But I perceive that they seem inclined to proceed with a higher hand in Ireland. The Privy Council in Ireland, in its Order of the 17th of January, 1868, says: "From and after the publication of this Order in the *Dublin Gazette* it shall not be lawful to remove or move along any public high-road or way, street or place, or by any railroad, rails, or tramways, canal, river, or public stream, or by boat, vessel, or steamer, or any public conveyance, or to expose in any market or fair in Ireland, or to export from Ireland, any cattle affected with *foot or mouth distemper*, or any sheep affected with foot or mouth distemper, foot-rot, or scab. From and after the publication of this Order in the *Dublin Gazette*, it shall not be lawful to expose in any market or fair any cattle affected with pleuro-pneumonia." Now, pleuro-pneumonia cannot be exported. I have here the opinion of Professor Ferguson to that effect; but its exemption from moving by road may mean merely that animals affected should be taken to the nearest shop for slaughter, and not moved by rail or boat. I have before me a very interesting report of the Professor, which I will put in

as an appendix to my introduction of the subject. There can be no doubt that all the diseases which affect cattle should be included in one Act, those diseases being now spread, as it were, over four or five Acts, and seven or eight orders in Council; and that one Act should, of course, include glanders and typhoid fever among pigs (Hear, hear). I think we should insist upon isolation; and if ever compulsory slaughter should be again ordered, it should, of course, be accompanied by ample compensation (Hear, hear). The railway transit of cattle is at the present bad and dear. We augh at the foibles of railway directors and at the fierce competition in which they engage, but we forget that farmers generally pay for everything of that kind in the end. Railways in this country have a monopoly, and we cannot help ourselves; but abroad the Governments plan railways and frequently make them also, or advance money for that purpose, and the result is that abroad cattle are moved twice as cheaply as in England. Of course cattle ought to be watered at all the stations where they stay for any time. The railway trucks should also be improved, their filthy and disgusting condition till within the last year or so having been *one great source of spreading disease*. Some railway companies now make us pay a shilling for the cleaning the trucks. I suppose they will next make us pay for the dusting of first-class carriages. The trade in dead meat is even more crippled than that in live stock by railway charges. The charge for live bullocks from Norfolk to London is from 10s. to 12s. 6d. a head, for dead bullocks from 8s. to 3s. 6d. per cwt. Five tons of meat in a truck are carried at a cost of £15; the same sized truck carries six live bullocks for £3 10s. As regards the important question of the watering and feeding of cattle during transit, my own opinion is that all cattle ought to be watered every 12 and fed every 24 hours. Professor Simonds tells us that if cattle are fed once in 24 hours no harm will happen to them, as they carry a large supply of food in the rumen, and can draw upon it for a supply. But he says that in hot weather cattle ought to be watered at least once in every eight hours. It is objected that cattle cannot be watered unless they are unloaded. But I think some contrivance might be adopted, such for example as hanging on the truck a trough when the train is shunted, which would overcome the difficulty. There is one other little point which I must impress upon you. I do not know whether the idea will meet with general assent, but I think that all store cattle when they are moved by railway should be charged a *mileage rate* rather than a *truck rate*. Who are the people that move the cattle? Chiefly the dealers; and when a truck is capable of holding 10 beasts they try to cram in 12, or possibly 13. With a mileage rate there would be no temptation of that kind; and the result would be much less overcrowding. As regards ships, steps should be taken to secure their being properly constructed and registered. There should be a certain number of cubic feet for young or old cattle, sheep, or pigs; the principle adopted in that respect in the case of emigrant vessels being equally applicable to the case of ships used for the conveyance of animals. I believe it has often occurred that animals have been brought over without any provision either for food or water; and there are great deficiencies in the way of berths. I have another point to mention, and it is this—that we shall have no real or permanent redress until there is a department of the Board of Trade, specially devoted to agriculture (cheers.) We want some one about the Government who possesses the confidence of the agricultural interest, some one to advise and guide us in our difficulties, and help and support us in our disasters. At present we have nothing of that kind but

what is conflicting and embarrassing. It was too bad for a noble lord to tell the House that Thames Haven should be closed, and then for the Lord President to keep it open. It was slow work to confine Belgian sheep to the port of landing eight weeks after the plague had broken out at Antwerp, and it was unpardonable red tape which, in awarding the Government compensation, deducted *salvage* from *buried* cattle, while it was curious that agricultural statistics collected *last July* were *not yet* in hands of members. Now, gentlemen, to summarise my remarks, let me say, in conclusion, that fat cattle from foreign countries should be taken to the waterside market and slaughtered; that all foreign store animals should be quarantined, and there should be better regulations as to ships, wharves, &c.; that the home trade should have a better transit provided for it; that there should be a thorough inspection at markets and fairs, and a strict isolation of all diseased animals; and that there should be compulsory slaughter in certain cases, but that compulsory slaughter should always be accompanied by sufficient compensation (cheers). I have, I am aware, trespassed on your patience for a very long time. I know it is not the practice on these occasions to pass a resolution; but I have the authority of the Committee for saying that they agree with me that it is extremely desirable that this Club should send a deputation to the Government to support the Bill which they have introduced (Hear, hear). In treating this question as I have done, I have tired myself, and no doubt wearied you. There is much that I have not dwelt upon that is most important, but well known to you. I now resign the subject into the hands of the meeting, trusting that the criticisms will not be sharp, and that the discussion will be vigorous, useful, and practical, and will make up for and supply the many defects of this introduction (cheers).

[APPENDIX.]

Veterinary Department of the Privy Council Office,
Dublin Castle, 20th January, 1868.

SIR,—I have to apologize for not having sooner replied to your letter of the 18th instant; but I have been so occupied in closing the accounts of the Cattle-plague Staff of the Veterinary Department in Ireland, that I had not time to give you the information you so courteously requested. In my opinion the transfer of cattle affected with any disease into Great Britain—Ireland included—should be prohibited. Such was the case, as far as cattle exported from Ireland, for nearly two years before the 17th instant, and the result, even in Ireland, has been a marked diminution of pleuro-pneumonia and other infectious and contagious cattle diseases, as well as—as far as I can ascertain—a complete disappearance of foot-and-mouth distemper from Ireland. As, from the operation of a Council Order, during the time alluded to, no cattle affected with *any* disease could be legally exported from Ireland, the traffic of diseased cattle from the interior of Ireland to the ports of embarkation was arrested, and the spread of infectious and contagious diseases thereby considerably diminished. The diminution of the spread of such diseases, so caused, must have been comparatively much greater in Great Britain than in Ireland, from the circumstances necessarily attending the cross-Channel passage, together, of diseased and healthy cattle from Ireland to Great Britain, being so much more favourable to the transmission of infectious and contagious diseases, from the former to the latter animals, than when they are travelled in the open air, together, merely through Ireland, by rail or high roads. This is the inevitable result of healthy and diseased animals being confined, closely packed together, for so long a time, on board ship, in the cross-Channel transit from Ireland to Great Britain, in the great majority of cases, in the hold or below board, where the ventilation is necessarily so defective that all the animals thus confined are obliged to frequently respire the same air, no matter how polluted by being impregnated with the expiration of exhalations from the diseased animals forming a portion of the living cargo. With respect to the inland movement of cattle and sheep in Ireland and Great Britain, it would be desirable to prevent the

movement of infectionally and contagiously diseased live stock as much as possible, consistently with the legitimate requirements of trade and the interests of the general public. To attempt preventing the movement, under every circumstances, of all infectionally diseased cattle, would involve insuperable difficulties, and, in fact, be found quite impracticable; therefore, in legislating on the subject—prohibiting as far as practicable the movement of infectionally and contagiously diseased cattle—provision should be made for the non-interference with the movement of any cattle, sheep, or swine, that become recognizably diseased while in *transit*, or in a fair or market, or in any resting-place—on their route to their eventual destination—in which they have not been for more than four days; certainly not beyond six days. It should not be lawful to remove, or move along any public high-road, or way, street, or place, or by any railroad, rails, or tramway, canal, river, or public stream, or by boat, vessel, or steamer, or by any public conveyance, or to expose in any market or fair, or to be allowed to be landed in Great Britain, from the sea-board, any cattle affected with pleuro-pneumonia, foot or mouth distemper, or mange, or any sheep affected with foot-and-mouth distemper, foot-rot, or scab; or any swine affected with any pustular affection, or with the malady generally known as “the soldier,” or “the red disease,” or “scarlatina,” in which there is a discoloration of the skin, varying from red to a purple, provided that the animal, or animals, affected with any of the said diseases became so affected while in *transit*, or while it or they, were being so removed from the last farm, lands, premises, or other place, on or in which it or they were for more than six days previous to their removal therefrom, or while it or they were temporarily in a fair, or market, or in any other place, either for sale, or for keep, or for rest during transit for any period of time less than five days immediately previous to such removal. But, nevertheless, it should not be lawful to move such diseased animals with other animals not so affected, unless the latter and the former are *bond fide* the property of the same person or persons; and it should not be lawful to move such diseased animals in the same railway, waggon, or in the same boat, or other conveyance, with other animals free from any of the said diseases, and belonging to a different owner. Any person moving such diseased animals by a public railway, tramway, or in a boat, or vessel, or other conveyance, should signify the fact of the animals being so affected to the proprietor, or proprietors of the same or to his or their agents, previous to giving such animals into his or their charge, so that such proprietor or proprietors or his or their agents, might thus receive notice, so that, before conveying other animals in the same truck or compartment, or boat, vessel, or other vehicle, which had been used for the movement of such diseased animals, the proprietor, or proprietors of such conveyance, should, within twenty-four hours from the delivery of such animals, have such truck, or compartment, cattle waggon, boat, vessel, or other vehicle thoroughly disinfected. All railway trucks, carriages, waggons, boats, vessels, or other vehicles of conveyance of any animal or animals affected with any of the diseases herein mentioned, should be, by their owner or owners, or by his or their agents or servants, disinfected after the carrying of such diseased animals, and within twenty-four hours of such carrying, by sweeping out, and effectually removing all dung, saw-dust, litter, or other matter from the trucks, carriages, waggons, boats, vessels, or other vehicles, and then by thoroughly washing the same with water, and then by applying to the floor of the truck, carriage, waggon, or vehicles, and to the sides, floor, and ceiling of the hold of the boat or vessel, and to every other part of the boat or vessel, with which animals or their droppings come in contact, a coating of lime-wash, made up by mixing good freshly-burned lime with water, and containing, in each gallon of lime-wash, either one-fifth of a pint of carbolic acid, or one-fifth of a pint of creosylic acid, or four oz. of fresh dry chloride of lime, such lime-wash to be prepared immediately before use. The sweepings should be well mixed with quick-lime, and effectually removed from contact with animals. I have the honour to be, sir, your most obedient servant,

HUGH FERGUSON, H.M.V.S.

To Clare Sewell Read,
Honingham Thorpe, Norwich.

Mr. J. CLAYDEN (Littlebury, Saffron Walden) said he was sure they must all feel indebted to Mr. Read for the very excellent manner in which he had introduced that

important question (cheers). There was probably not one person in this kingdom, except the vegetarians, and there were very few of them who were vegetarians by choice (laughter), who had not suffered from the high price of meat, and that high price was owing, in a great degree, as Mr. Read had shown, to the diseases which were brought from abroad by the importation of foreign stock. He was old enough to remember the time when the diseases among our own cattle were exceedingly small in amount. At that period cattle could be brought from a distance without the farmer who received them feeling any more insecure than he did with regard to the animals in his own yard. But that was certainly not the case now. First pleuro-pneumonia decimated their herds, and that was followed by foot disease, small-pox, and last of all rinderpest, proving beyond all doubt that these diseases were introduced by the importation and free transit of foreign stock. They all knew what frightful ravages the last-mentioned disease had made among the herds of this country. He was afraid, too, that it had, in a great degree, checked the reproduction of cattle. In Cheshire, which, as they were all aware, was a great breeding county, animals had died by thousands and tens of thousands. Hence it was that so many English farmers were desirous of increasing their stock by having recourse to Ireland, which, thanks to Lord Palmerston, was saved from the cattle plague. As regarded English fairs and markets, he could not but think that a certain amount of protection ought to be provided for them. He had been told that animals which were brought to Norwich by 9 o'clock in the morning, after remaining at the railway station till 6 in the evening, were then driven from the market to low-lying meadows, where they lay down amid the mist and fog that often prevailed; and what was done at Norwich was also common at other great markets. What could be expected under such circumstances but the spread of the disease? There could be no doubt that it must come to this, that markets must be established for the sale and slaughter of foreign store cattle. As regarded separation in the London market, the foreign animals being kept on one side and the English on the other, that would do no good whatever, because the same restrictions which were now enforced would still be required. Nothing but the having a waterside market at the ports of debarkation and the keeping foreign stock entirely by itself could afford adequate security to the English cattle owner; and he would add that nothing else would enable English consumers to obtain a supply of good meat at a moderate price (Hear, hear). He did hope that the deputation, suggested by Mr. Read, would be appointed, and that the Government would be especially urged by it to endeavour to get a separate market established for foreign stock in some convenient spot in the vicinity of the metropolis, having the advantage of rail and water accommodation, and as contiguous as possible to the habitations of our working population.

Mr. P. J. PAGE (Coombe, Kingston) said he had taken a rather active part in the proceedings of the Cattle Defence Association, being convinced that the object of that Association was of vast importance, not merely to the agricultural community, the breeders, and the feeders of animals, but likewise to the consumers of meat (Hear, hear). He thought they were much indebted to Mr. Read, who, being fully impressed with the gravity of the case, had from the commencement devoted so much of his valuable time and his practical talent to the consideration of this question, and brought the movement so far to a successful issue. At the same time they must not expect too much. Hercules could not bear the universe upon his shoulders; nor could any man or set of men. Mr. Read and the Defence Association formed no exception, to carry out the object in view, without being well backed up, and sup-

ported by those who were chiefly interested in the matter (Hear, hear). Mr. Read had touched lightly on the fact that many classes of persons had been injured by the restrictions which were maintained, though they would have been still more injured under the circumstances, had those restrictions not existed. Among those who had been thus injured, he (Mr. Page) would allude to the consumers of meat in the suburban districts of the metropolis. They all knew that for some time such persons had experienced great difficulty in obtaining a supply of the kind of beef to which they had been accustomed. He could testify with regard to the southern districts that the butchers there had had great difficulty in providing a proper supply of meat for their customers. Gravesend, Croydon, Kingston, Brighton, and other towns were placed in a similar position, and the inconvenient restrictions to which such places are exposed had tended greatly to set class against class, and enhance the price of meat. He trusted that this matter would not long remain in its present position. They were all aware that the restrictions were still in full force, and that as regarded London competition for the cattle sent from Aberdeen or Norfolk was thus destroyed. The butchers within the area of the Metropolitan circle had, in fact, a vast monopoly with regard to cattle. This state of things told very much against the interest both of the grazier and the consumer, and he believed that even the Corporation of London did not understand its real interest. Lord Robert Montagu told them that they could not stop the road; but, on the other hand, his lordship should be reminded that it would be difficult to stop popular feeling on that subject. He would suggest that farmers should co-operate heart and soul with the Government in having the question brought to as speedy a conclusion as possible. As regards the Corporation of London, he believed that the diminution of cattle brought to their market would be nothing like what it seemed to apprehend. The increase of home stock would, he believed, compensate to a great degree for the reduction of foreign stock; while the new market for foreign stock would bring a large revenue, and materially assist the Corporation in developing the income derived from the sale of dead meat in the new markets. He trusted that they would all unite with Mr. Read in demanding the establishment of a Board of Agriculture, resembling the Board of Trade. For some years past it had been continually proposed that fresh burdens should be imposed on the landed and agricultural interests, and that was one reason why there should be a separate department of the Government for the protection of agriculture. As regarded the trade in foreign animals, he believed that foreign salesmen and consumers would be greatly benefited by such improvements as were suggested by Mr. Read. There was at present a shameful waste of what ought to be preserved as food for the community; while at the same time there must be great risk of the introduction of foreign diseases as long as such a system lasted. Such a system could not but tend indirectly to predispose consumers to disease.

Mr. G. LEAR (Arundel) said, in speaking of the evils of the present system, Mr. Read alluded, to a great extent, to his local knowledge of what had taken place in Norfolk. Living as he (Mr. Lear) did on the south coast, he wished to say a few words about what had occurred there. Close to the place where he resided there was a very small sea-port. A Frenchman living there imported foreign cattle. The magistrates did what they could, with the aid of the laws as they existed, to prevent the cattle imported there from being removed from the port of debarkation; but the result was that, in spite of all restrictions, cattle were removed from the place to which they were consigned, to meadows in the neighbourhood, and were the cause of disease being spread.

The animals thus imported came in contact with dairy-cows in the neighbourhood; and they all knew that, of all animals, dairy-cows were most liable to disease. He was happy to say that ultimately their foreign friend found that the trade did not answer: consequently, he gave it up, and no more cattle were infected. The animals which came to that port were not such as he (Mr. Lear) would have liked to partake of. He lived in a district where the first quality of Sussex bullocks and sheep were in demand, and the consumers would not put up with any meat that would not bear examination. As regarded the cattle-plague, which in his county produced the greatest consternation, he might remark that in every case it was distinctly traced to some calves which were brought from London to Chichester market, and sold there. Those calves, having come in contact with other animals, spread the disease in various directions; and in every case, he repeated, the disease was distinctly traceable to that cause. The results were most disastrous. Many farmers lost from 10 to 20 bullocks. An association was formed to compensate those who sustained losses, and though there were some heavy payments to be made, nearly all united in alleviating as far as possible the losses which were inflicted. As regarded the importation of foreign cattle, his own opinion was that they should be slaughtered as far as possible at the port of landing. If there were a separate market for foreign cattle there would, he presumed, still be a quarantine. In that case, gentlemen who chose to buy them might do so at their own risk; but for his own part he should be sorry to purchase any animals that came from abroad. He felt quite sure the free trade in cattle had hitherto increased the price of meat instead of diminishing it, and therefore he would recommend that in future the greatest possible precautions—he did not pretend to say how they were to be carried out—should be taken with regard to imports from abroad, knowing as they did that disease was always raging there. He hoped that Mr. Read, who was so much better aware of the best mode of proceeding than he was, would take care to impress the importance of such precautions upon the Government.

Professor BROWN, V.S., said there were certain points advanced by Mr. Read which appeared to him to require consideration. He had suggested the sending of a deputation to the Privy Council, and had remarked on the desirableness of striking while the iron was hot if they wished to prevent the extension of certain diseases among stock. Allow him to assure the meeting that they would not strike one moment too soon if they began hammering away at once. Six months ago he might have told them that he scarcely knew where to find a case of foot-and-mouth disease or pleuro-pneumonia in the whole kingdom. He was sorry to say that he could now find a great many cases, and not many miles from that place. What he anticipated had taken place. The removal of restriction upon the movement of stock had been followed by the conveyance of infected animals from one place to another, and the result was that foot-and-mouth disease and pleuro-pneumonia were now extending very rapidly in many parts of the country. There was no probability that cattle in the last stage of pleuro-pneumonia, or sheep in the last stage of scab would be sent to the market; but infected animals might be driven along the public highways, or be conveyed in boats, or by railways, without the slightest risk of detection. He agreed, however, with Mr. Read that there was a great necessity for protection against the introduction of disease by foreign animals. That was a matter deserving of the most serious consideration; but it was also very desirable to adopt some system for the prevention of the spread of contagious diseases among our own stock. This subject seemed to be

even more important than the question of the establishment of a foreign market—a question which he regarded as settled. (A VOICE: "Not yet.") If agriculturists generally had made up their minds on that subject, it was, he thought, settled. They might depend upon it that the great difficulty would be not to get a separate market established for the sale of foreign stock, but to keep their own stock healthy after they had secured what they seemed to consider the only thing necessary for their protection (Hear, hear.) Supposing there were a foreign market, the same dealers and drovers for the most part would be connected with both markets; they would pass from the foreign to the English market, perhaps carrying infection with them, and disease might be transmitted over a wide extent of country before the fact of its existence had been discovered. He admitted that a foreign market would afford a certain amount of security, but he denied that the security would be absolute (Hear, hear.) With regard to Mr. Read's remarks about quarantine, he wished to say that there was enormous difficulty in defining the precise period for the retention of animals, and which was absolutely necessary to prevent the possibility of contagion. In the case of foot-and-mouth disease two days' quarantine would be generally sufficient. So far as cattle plague is concerned ten days would suffice: but in respect to pleuro-pneumonia, they might fix any time, from two weeks to two months. He mentioned these points to shew what great practical difficulties would have to be encountered in the attempt to arrange an efficient system of quarantine. He had found animals to be attacked with lung disease after they had remained more than two months without affording any indication of the affection. By proper inspection and inquiry, however, it might be ascertained whether animals came from a healthy country or not. It had been remarked that Ireland supplied a large quantity of store stock. It was natural that she should do so; but there was a great impediment to the full development of her resources in the unfortunate system of small holdings. Great improvement had taken place recently. The best class of animals were being produced in the Midland Counties and in the best grazing counties; and if the Irish agriculturists could by any restrictive measures prevent outbreaks of pleuro-pneumonia, there might be an unailing supply of store animals from Ireland. The initiative had been taken in the Orders in Council referred to by Mr. Read. The price of Irish store stock would no doubt rise if agriculturists in this country could feel confident that it was healthy. The present system in Ireland was merely a prohibitive one. Inspection had altogether ceased; there were no inspectors at any of the Irish ports, and the only security was that any one might object to an animal's condition, and take proceedings against a person who attempted to remove it from the country.

Mr. W. G. GUERRIER (77, Camden-road, London), said: Representing as he did the interests of some importers, and knowing that English farmers while they advocated their own cause to the utmost, were disposed to give fair play to others, he craved the indulgence of the meeting while he said a few words on what he would term the other side of the question. He had listened with great respect to the speeches of previous speakers, including the practical one just delivered. He hoped Mr. Read would excuse him for saying that he was mistaken in supposing that disease was always raging in every country on the continent of Europe. He would wish that gentleman to tell him what disease raged at the present moment in Spain or Portugal, or what disease was always raging in Sleswig-Holstein or Denmark Sweden, all these being countries from which cattle were imported into England. He did not deny that disease existed abroad,

but he must say that the sweeping assertion to which he alluded was not borne out by facts; and he must add that the great secret of successful discussion was that it was based on facts. He had the honour to represent equally the foreign and the English view of this question. His business lay equally among English farmers and among foreign importers of cattle; and he would advise the former to beware of having such restrictions imposed on foreign stock as might cause a diminution of breeding stock abroad, for they might depend upon it that that, by affecting the price of meat abroad, would re-act against their own interests as breeders. Let them not insist on the foreigners being subjected to unfair conditions. Let them try to keep out of this country the diseases of the continent wherever they existed; and let them bear in mind, too, that there were others who might demand legislation as well as the agriculturists: he meant the British public. The association which called itself "The Home Cattle Defence Association," indeed, had talked a great deal about the British public; but he was not aware that it had endeavoured to cheapen the food of the British public. The question was, how to promote the interests of the various classes concerned?—the British farmer, the British consumer, and the importer of foreign cattle. He believed that the establishment of a foreign market would be an injury to the consumer. (Loud cries of "No, no.") He had expected to have it (laughter)—he was not at all surprised at that interruption.

The CHAIRMAN said he must beg that the speaker might have an impartial hearing (Hear, hear).

Mr. GUERRIER repeated that he had expected to have it; but he was looking at the question in all its bearings. Now, what was best to be done? He would say this, Have proper restrictions upon the importation of foreign cattle, but let them come into London, let the trade go on. Mr. Read thought that no faith was to be placed in the Lords of the Privy Council. That gentleman would rather have an Act of Parliament (Mr. Read: "A great deal"). Now what was a metropolitan market for? He had heard a gentleman talk about suburban districts not being able to procure meat. The Metropolitan Market was intended for the supply of London, not for the country district. The gentleman to whom he alluded argued that cattle should be brought to London for the sake of the country, where disease did not exist. There were plenty of other markets for the country, and let London have its own market. He did not care much about this matter so far as his own interests were concerned ("Bravo," followed by laughter); but they might depend upon it that if there were a separate market for foreign cattle, and slaughtering on the spot was compulsory, there would not be half as much care exercised with regard to cattle brought from various parts of the Continent to London as there was at present: all would then be allowed to come in freely, irrespective of peculiarities of district. Let them have importation only from foreign countries which were known to be safe; and when the animals had been properly inspected after their arrival, let them be sent to the Metropolitan Market for sale.

Mr. JOHN THOMAS (Bletsoe, Beds) said Mr. Page remarked that there was a sort of monopoly on the part of the butchers of London, inasmuch as cattle could not be taken beyond a certain distance from London. He (Mr. Thomas) appeared there not as a consumer of meat, but as a producer. He had been in the habit of feeding from 50 to 60 beasts in each year, sometimes more and sometimes less, and he had generally sent most of that number to London. This year, however, he had only sent four, and the cause of that was the restrictions and monopoly referred to by Mr. Page, and in consequence he found it more advantageous to sell his stock at home. He, however, thought the farmers were very much indebted

to the Government for preventing foreign cattle from going about the country spreading disease in all directions. The consumer would have suffered from that quite as much as the producer. Notwithstanding what was said by Mr. Guerrier, he was satisfied that matters would never go on rightly until a foreign market had been established.

Mr. J. K. FOWLER (the Prebendal Farm, Aylesbury) said: Being a member of the Home Cattle Defence Association, and having been on two or three deputations to the Government, he thought he might safely say that the Government really wanted a pressure to be brought to bear upon them on this subject. The deputations were received with very great courtesy. He had had the honour of visiting the Chancellor of the Exchequer in company with Mr. Odams and other gentlemen, and he found that the Government really wished for information. He believed that if a number of influential gentlemen belonging to different parts of the country were to wait on the Government and bring a proper pressure to bear upon them, they would thereby do a great deal towards enabling them to carry a Bill which was likely to prove effective for the purpose for which it was introduced. As regarded the cattle plague, he could testify that it was introduced into the Vale of Aylesbury by cattle which came from London, and he, for one, therefore thought the Government were quite right in stopping the removal of animals to the country. On the other hand, if a foreign market were established, there would, in his opinion, be no reason, the cattle plague having ceased, why there should not again be free trade as regarded the moving of cattle (Hear, hear.) He denied, what was asserted by Mr. Guerrier, that the Metropolitan Market was intended for London alone. The fact was the reverse, at this season of the year; for example, the Vale of Aylesbury was an importer of live meat, and the Vale depended in a great measure on the county of Norfolk for their supply up to Midsummer next. The Metropolitan Market was established for the kingdom, and for many other districts besides London, and the result would be unsatisfactory if transit to other places were permanently stopped.

Mr. J. WILLIAMS (Baydon, Hungerford,) said he had not intended to speak on that occasion, as he kept very few cattle, but having had the smallpox among the sheep in the next parish to his own, he could not refrain from saying a few words. He thought that upon general principles the Government were bound to take into consideration the case of the agricultural interest. We had now to compete with all the world. Foreign animals being imported into this country free from duty, he thought the Government were bound to see that such animals came into the country free from disease (Hear, hear). Some years ago Mr. Gladstone, in introducing his budget for the year, spoke of the various great interests in this country. He took them alternately, one after the other, and remitted taxation affecting the whole of them. At last he came to the British farmers, and, with a smile on his countenance, he told the House of Commons that he thought the British farmers were capable of carrying any amount of weight, and therefore he left them to their fate (laughter). Parliament did as it liked; they introduced these animals into this country free of duty, and he maintained that the Parliament and the Government were bound to take care that they were introduced free from disease (Hear, hear). Now, how was that to be accomplished? It could only be done as Mr. Read argued, by the slaughtering of foreign cattle at the port of debarkation. He quite agreed with Mr. Read that evils of this kind would never be thoroughly remedied until they had a Minister of Agriculture. As regarded what Mr. Guerrier said about the interest of the consumer, he would ask that gentleman whether he would undertake to

solve the question what was the difference in the supply of meat for the British consumer from the time when foreign animals were first introduced duty free? Would he undertake, by means of a debtor and creditor account, to show the value of the stock imported, and then deduct the fearful losses which the British farmer had sustained from the commencement, and the balance would shew the advantages derived from importations from abroad? (laughter). If he would do that, he would astonish himself and astonish the British public by realising the fact that, while introducing such a quantity of tough foreign meat into this country, the Legislature had destroyed a very large number of the best animals in the world (renewed laughter).

Mr. C. WESCOMB (Exeter) said: As a large consumer, residing at the West-end of London, he naturally felt a deep interest in the price of meat; but he believed that the interest of the British farmer and that of the British consumer were identical on that question, and he believed that the effect of the importation of foreign cattle had been to cause the latter to pay an increased price for his meat.

Mr. W. GARDNER (Bekebourne, Canterbury) said that, in connection with the remarks of Mr. Wescomb, he would quote the following extract from a speech made by Mr. Kilby, of Appleton Roebuck, at a meeting of the York branch of the North Riding Chamber of Agriculture: "From the 1st of January, 1842, to the 31st of December, 1866, the number of cattle imported into the United Kingdom had been 2,411,755; and as there had been a loss of 4,286,427 from imported disease, that loss reached to 1,874,672 more than the number imported." If that statement were correct, there could be no difficulty in understanding how it was that prices had been so high. He was sure that no one there wished to prevent the importation of foreign stock; but, on the other hand, farmers must be protected against foreign disease (cheers).

Mr. READ then replied. He remarked that Professor Brown seemed to think that all that farmers cared for, at present, was the establishment of a separate market for foreign cattle; whereas he (Mr. Read) expressly said that, while regulating the foreign trade, it would be necessary to attend to the transit of home stock (Hear, hear). He thought that every member of the Club must see the importance of attending to both. The learned Professor also said that the quarantine of cattle for pleuro-pneumonia must last, perhaps, for three months. He did not suppose that any quarantine would be an entire safeguard; but a very learned Professor had assured him that inoculation for pleuro-pneumonia would, after the lapse of ten or fourteen days, be quite sufficient to guard animals against attacks from pleuro-pneumonia. Professor Simonds said that, though inoculation might destroy the tail of the animal, it would not prevent it from receiving disease in the lungs (Hear, hear). Which of the two learned professors was right, it was not for him to say (laughter). He quite agreed with Mr. Guerrier that some parts of the Continent were almost free from disease. He, for one, would be quite prepared to receive cattle from

Spain or Portugal alone, and let them go anywhere; but that could not be done, as it would be contrary to treaties, and opposition would be sure to arise. Any restrictions that were established must be imposed upon all countries equally. Moreover, why was Portugal, why was Spain—nay, why to a great extent was France—free from cattle-disease? Why, in consequence of the many restrictions which had been imposed. He took great pains in reading Lord Robert Montagu's speech on proposing the Cattle Diseases Prevention Bill; and he noticed that it was there stated that Holland, "being too trading," was not free from disease at that time. Why, then, should there not be wise legislation for the purpose of keeping it out of this country? Mr. Gnerrier argued that they were trying to impose on foreign stock restrictions they could not bear themselves. Let it be remembered that the proposed restrictions were forced upon them (Hear, hear). They had tried the experiment of unrestricted admission for five-and-twenty years; and what was the result? *Why, high prices to consumers, and frightful loss to producers* (Hear, hear). They did not wish to keep out foreign stock: they did not wish to have a single pound less meat in the country; but they did desire to avoid foreign disease (Hear, hear). He regarded the establishment of a foreign market as all but an accomplished fact. He had shown that the importation of foreign cattle had been gradually declining during the last three years, and that was, he believed, in a great degree, owing to the want of a proper system. He concurred in the following remark which had just been placed in his hand. Surely there would be no hardship in having a dead-meat market at the east end of London when such an immense quantity of foreign dead meat finds its way to London from a distance of 400, 500, and 550 miles. As regarded the appointment of a deputation, he thought the best course would be to leave that matter in the hands of the committee of the Club (cheers).

The CHAIRMAN said it had been suggested that as the question which had been discussed was to be decided by Parliament, it would be well if a copy of Mr. Read's introduction were sent to every member of the House of Commons, or at all events to all the county members (Hear, hear).

On the motion of Mr. J. THOMAS, seconded by Mr. CLAYDEN, it was resolved that a copy of Mr. Read's address be forwarded to each member of the House of Commons.

Mr. READ: If you send it they will not read it (laughter).

On the motion of Mr. T. HORLEY, seconded by Mr. J. THOMAS, a vote of thanks was given to Mr. Read, for the admirable manner in which he had introduced the subject.

On the motion of Mr. NICKOLDS, seconded by Mr. MARSH, a vote of thanks was afterwards accorded to the Chairman of the evening, Mr. H. Trethewy, and this terminated the proceedings.

The DUKE OF MARLBOROUGH, as Lord President of the Council, has consented to receive the deputation from the Privy Council Office, on Tuesday, March 3rd, at one o'clock.

THE COVENANTS TO BE INSERTED IN FARM LEASES.

The following paper, by Mr. C. G. Grey, was taken as read at the last meeting of the Hexham Farmers' Club:—

At the annual meeting of this club ten years ago the president introduced a discussion on "The landlord's interest in a lease, and its tendency to promote good cultivation," and at the same time a report was presented by a committee appointed to draw up a form of lease. After the lapse of ten years I think it is not too soon to discuss this subject afresh. I shall

not enter into any discussion on the relative merits of leases and yearly tenancies, taking for granted that this club is still of opinion that leases tend to promote good cultivation. I propose to take the lease prepared by the committee of this club, which I shall call "The Club Lease," as the basis for discussion, commenting on any omissions from it that I think worthy of notice. If the letting of land is to be considered as a purely mercantile transaction, the covenants should be such as will

protect the landlord's property from waste, and ensure its restoration to him in as good a state as when he let it, and also insure to the tenant the full opportunity of reaping the fruits of his capital and labour. Those members of the club who think that anything left to the natural good feeling between landlord and tenant is a relic of feudal times, and consequently of barbarism, will insist on the terms of the lease being final. I am not one of those, for I think the subject of a farm lease is of a nature not to be treated in a purely mercantile spirit without loss to the community. Where estates are managed by properly qualified agents, tenants will not ask to encroach on the terms of their lease to the injury of the estate, and the agent will always be ready to grant leave to infringe the terms of the lease where he sees it to be for the good of the tenant without hurt to the landlord. The restricting clauses in a lease are intended to restrain the ignorant and dishonest tenant, but not to hamper the action of the honest and improving farmer. I have seen it stated by writers on agriculture that the tenant is the best judge of his own interests, and that they are identical with those of the landlord. It may be that where an estate is under the care of an unqualified agent, the tenant does know better than he how the land should be farmed, but I deny that his interests are identical with those of the landlord. I could cite endless examples. For instance, if a tenant is not bound against breaking up old grass, can every tenant be trusted to leave it untouched at the end of his lease? Or could all tenants be trusted to crop the land to the end of the lease so as to be advantageous to the succeeding tenant as well as to themselves? I confess that having constantly studied this subject for many years, and having noted the many ways in which tenants have been able to evade the conditions in their leases to the injury of the land, I am unable to make a form of lease which shall be sufficiently stringent to restrain an evil-disposed tenant without being too severe on a good tenant. The only way that I see out of the difficulty on a well-managed estate is to depend on the agent relaxing the conditions whenever he finds it to be for the mutual advantage of landlord and tenant. As an agreement for a lease must now bear the same stamp as a lease, there is not much saving in using agreements only, if a form of lease can be arranged in which the blanks can be filled up by the agent to suit each case. I do not know whether it is necessary that a lease should be drawn in legal phraseology, which is often unintelligible to the ordinary reader of English, or whether there is any rule of law against punctuation; perhaps it is only that full stops and commas, not being paid for, or being of assistance to the lay reader, are discarded by the legal profession. I shall now take the club lease *seriatim*. First comes the date of the lease and the names of the parties thereto, with their descriptions. In the club lease, as in many others, after the name of the lessor follows "Who with his heirs and assigns is hereinafter described as 'The Landlord,'" and after the name of the lessee "Who with his Executors and Administrators is hereinafter called 'The Tenant.'" The club lease contains no clause against assigning or sub-letting either voluntary or under the operation of bankruptcy, unless the absence of the word "Assignees" from the expression of the meaning of the word "Tenant" is meant to imply a prohibition to assign. The question of assigning leases has lately occupied much of the attention of the Scottish Chamber of Agriculture, and it is amusing to see the difficulties into which some of the speakers have fallen by advocating this right; for instance, Mr. Glendinning, of Hatton Mains, in reference to "Assignees and sub-tenants," says, "To these there can be no objections, the landlord having full power to get the conditions of the lease properly fulfilled." Now, if leasing is a purely mercantile operation, and a farm is always put up and let to the highest bidder, this must be admitted; but it is hardly consistent with another part of his speech, in which he says, "A properly-qualified tenant should be preferred at the fair value of the land." It seems clear to me that if a tenant can go into the market with his lease in his hand to offer to the highest bidder, the landlord has no inducement to select a good tenant at a fair rent. I cannot better express my own views than by quoting the words used by Mr. Dickson, of Saughton Mains, in the discussion referred to: "In regard to the clauses excluding assignees and sub-tenants, I must say I differ from the opinions expressed by the gentlemen who have preceded me, as I consider this a fair and reasonable clause to be inserted in every lease. On all well-managed estates it is usual for the proprietor, or those acting for him, to select a tenant who has not

only sufficient capital and skill for the undertaking, but also that he is of respectable character, and would be a desirable resident on the estate. I have often known tenants selected at lower rents than were offered by others on this account; and, seeing that this is the case, would it be fair to a landlord that assignees or a trustee or a bankrupt estate should have power to sublet the farm to the most disagreeable tenant in the district? I cannot see that it would be so, as in such a case the duty of a trustee would be to let the farm to the man who would give him the largest sum for the lease." I agree with Mr. Dickson in thinking that a clause excluding assignees and sub-tenants is necessary; but if a tenant is forced by circumstances to resign his farm, or if on his death his executors do not wish to carry it on, the landlord should make all the allowances for unheated manure and labour that the lease provides for at the end of the term, unless the terms of an assignment can be come to with a tenant approved of by the landlord. I find my views supported in "Morton's Cyclopaedia," by the author of the article on leases, who, I believe, was your late president, and by Stephens in his "Book of the Farm." The writer in the "Farmer's Dictionary," edited by the Rev. J. M. Wilson, takes an opposite view from this. Next follow in the lease the name, situation, and acreage of the farm, which is hereby let in consideration of certain rents and conditions to be hereafter named. Second: The reservations out of the lease, which are generally all mines, minerals, and quarries, with liberty to use land for working them and carrying away the produce: also woods, trees, &c., with liberty to cut and carry away, and generally the sole right to hunt, shoot, fish, &c., on the land. Sometimes also power to take land for making new roads, fences, drains, watercourses, and plantations, in all cases allowing the tenant reasonable damages, which should be determined by arbitration. Power should also be reserved for the landlord or his agents to go over and examine the state of his property at reasonable times, but I do not find this in the club lease. The reservations of minerals, &c., need no comment, as they are not part of the subject of the demise; trees, though growing on the surface, being the property of the landlord, remain such; and, though hedgerow timber is detrimental to cultivation, the tenant cannot claim any power over it, but should take it into account in offering for the farm. A landlord is never likely to take land to make roads or drains, except to benefit the public or his own property, and this is, therefore, a prudent reservation, as well as that to straighten boundary fences, which I have not seen except in the club lease. The question of reserving game is one which frequently gives rise to angry discussion, but here I shall treat it as one between the landlord and tenant only, omitting altogether the interests of the poacher, who has been the object of much sympathy here. I shall also avoid any discussion on the game laws; but, taking the law as it stands, I think the clause in the club lease is reasonable on farms at a distance from the landlord's residence. This clause reserves power to the landlord to hunt and shoot over the farm in common with the tenant, and on most large farms not in the vicinity of towns or public-houses where poachers congregate, a gentleman may enjoy excellent partridge shooting on these terms. But if the landlord chooses to live in the country, and to secure shooting near his house, he will make such terms on letting his farms as will give him this security, whatever laws may exist about game. The club lease provides a clause for such cases, reserving the sole right of shooting, but requiring the landlord to compensate the tenant for all damage done by game, the amount to be fixed by arbitration. If a landlord chooses to keep a rabbit warren or a swarm of hares he should fence in land for the purpose, and he would have to do so if he did not so easily find tenants to take his farms. The club lease does not reserve the right of fishing, and as that is now sometimes a valuable property, it should be reserved unless it is let to the tenant of the farm. Third: The habendum provides that the tenant shall have and hold the farm from a fixed day for a certain number of years, paying therefore a certain rent, by equal half-yearly payments, and also penal rents, which in the club lease are £10 an acre for every acre cultivated contrary to the conditions following, also £5 for every ton of turnip, mangold, hay, and straw carried away from the farm, unless purchased manure be returned to the farm in the next succeeding year, of the value of £1 for every ton of turnips and mangold, and £2 for every ton of hay and straw; the penal rent to be paid only for the year in which they are incurred, except

in the case of ploughing old grass land, when it shall continue in force for every succeeding year of the lease. I see no objection to the penal rents for mis-cropping and for selling turnips and mangold, but there is much difficulty about those for selling hay and straw. If a farm is situated where there is much demand for these products I think it would be right to arrange for their being sold to a certain extent, town manure being brought back in place of them. At the present time a good farmer expends large sums on purchased manures and feeding stuffs, even where he sells nothing but live stock, corn, and wool; and if he sells hay or straw he should apply the purchased manure in addition to the usual and proper quantities to be used on his farm; it would be found very difficult to carry out such a condition. I have found it better in my own practice to forbid selling these products in rural districts without leave in writing, and when I see a tenant feeding and manuring well I never have any hesitation in giving him such leave, without enquiring how much manure he is going to purchase. I think a fine should also be imposed on selling farm-yard dung, which I presume the club does not think any tenant should do. A heavy penalty for growing turnip and rape seed beyond what was used on the farm was some years ago introduced into leases on a large estate, from an outgoing tenant leaving a large field of turnips to seed, instead of consuming them, and sowing a crop of corn with which grass seeds could be sown, thus impoverishing the land, and depriving the incoming tenant of manure and new grass. It should also be provided along with the rent that the tenant should pay interest, which is usually £5 per cent., on all outlay made by the landlord with the tenant's consent, which has not been stipulated for at entry. The duration of the lease and the time of entry under this head would be interesting subjects of discussion. The duration of a lease in this country is usually from 15 to 21 years, and the time of entry the 13th of May. I think there is much to be said in favour of an autumn entry, and I am supported in this view by Lockhart Morton in his "Resources of Estates," who, after stating the reasons in favour of different times, says, "Taking everything into account, the advantages on the side of an autumn entry are very obvious." This is opposed to the opinion of no less an authority than Mr. John Grey, of Dilston, who, writing in "Morton's Cyclopædia of Agriculture," decides that the spring entry is to be preferred. I cannot see the grounds, however, on which Mr. Grey comes to this conclusion; for, judging from his own statements in regard to both systems, the evidence is clearly in favour of an autumn entry. The strongest of all arguments on the side of the latter is, that as October is really the commencement of the agricultural year, so it ought to be the term at which a new tenant should obtain possession of the land he has taken in lease." As, however, the custom of the country is not easily changed, I shall confine myself to the terms suitable to a spring entry. Fourth: The tenant here covenants to pay the rents reserved, and also all taxes, rates, and cesses, except landlord's property tax, land tax, and tithe rent charge. In Ireland the landlord is bound to refund to the tenant half the poor's rate, and I am inclined to think it would be a wise arrangement that he should do so here also, as well as the half of all parochial and county rates. In taking a farm, the tenant takes the risk of seasons and prices, but the fluctuations in local taxation seem to me to be matters which the landlord might fairly participate in, as he does in their application. This would not remove the burden of these taxes from the tenant to the landlord, for the average amount would be considered in letting a farm, but the tenant would have the comfort of something more substantial than sympathy when these burdens happened to increase considerably during a lease. Next in order come the things which a tenant shall and shall not do, and at the head of these are the cropping clauses. I find that some writers on the subject, for instance one in the "Farmer's Dictionary" above alluded to, denounce all restrictions on cropping, as well as all directions for cropping; he also quotes Arthur Young on breaking up grass. "One of these is, that the tenant must not break up any grass lands. But some grass fields are overrun with ants, moles, brambles, thistles, ferns, nettles, and all kinds of rubbish, and though cleaned, grubbed, levelled, and manured, would only bring forth other varieties of weeds, or put on a new face of worthlessness; and yet these fields must not be ploughed! Or fields which have been laid down by the landlord or by a former tenant as permanent pastures may contain a large proportion

of short-lived grasses, and speedily become not worth a groat per acre; and yet they must not be broken up!" Such statements as the above appear to me hardly to admit of argument. If a landlord considers a farm to be of more value because it has some old grass on it, he is surely right in reserving that grass from being ploughed; but if he is so foolish as to reserve grass that would be better in tillage, it is to his own loss, and he is ill advised; or where a landlord has gone to the expense, with his tenant's consent, of laying land to grass to improve the farm, is the tenant to have the temporary advantage of ploughing them out again, unless in consideration of a fresh arrangement of rent under a new lease? Should not the tenant rather be bound to manure that grass land at the period when it is generally inclined to fall off? I regret to have observed that the superior knowledge and disinterestedness of the tenant farmers is not always conspicuous in their treatment of land that has been laid in permanent pasture by them at their landlord's expense. On the subject of cropping conditions, Sir John Sinclair says, "If men were uniformly distinguished by knowledge and integrity covenants would not be necessary. In general, however, the covenants in leases are too numerous and too complicated; unnecessary restrictions are a great impediment to improvements, by precluding the spirit of enterprise and of experiment, which has proved the principal source of new discoveries and of prosperous agriculture." Also, "To prescribe an invariable mode of cropping for a whole lease is generally absurd and injurious, always ineffectual in promoting improvements." Mr. Dickson, at the late meeting of the Scottish Chamber of Agriculture, referred to above, says: "As to cropping, I think it desirable that the cropping clause should be put in a negative form; that is to say, that the tenant shall not have less than a certain extent of his land in green crop and grass, and not more than a certain extent under white crop during every year of his lease, and at the expiry he shall leave the same under a certain fixed rotation, as the case may be. This, in my opinion, is better than fixing any specific rotation during the lease, as it gives the tenant an opportunity of exercising his judgment in varying the rotation without prejudice to the interests of the landlord." I think the club lease is framed generally in this spirit. Fifth: Then, as to the reservation of certain old grass fields, which it is supposed to be for the benefit of the farm to retain in grass: I think when there are more than one grass field on a farm, the tenant should be bound to mow one of them named by the landlord from the 1st of March preceding the end of lease, which will be of great value to an incoming tenant. Sixth: The extent of corn to be grown may be limited to a half, two-fifths, or a third of the tillage land, according as it is good and strong, or light and poor land; two corn crops should not be taken in succession without leave, which however the agent may frequently find it proper to give. The tenant may be bound to have half the extent in fallow or fallow crop that he has in corn, and an equal extent in new grass, or on strong land partly in beans. He is thus left at liberty to reduce his crop if he pleases, but must preserve a proper proportion in his rotation, and leave a fair entry for his succeeding tenant. In many districts tenants do not desire to grow more than three or four acres of potatoes, and agree to be limited to that extent; but where potatoes are grown largely for sale, the tenant should be bound to bring on to the farm an extra quantity of manure or feeding stuff. I know that an objection urged by some agents to so much liberty of cropping being allowed, is, that tenants will often so arrange their tillage as to have most crops off the best land, while they leave the poor land probably in third or fourth year's bad grass at the end of the lease, and I must admit that they have some grounds for this opinion; but on a well-managed estate the agent will make a note of such things against the re-letting the farm. With regard to the course of tillage being prescribed in leases, it is scarcely credible that any sensible man could bind himself by such clauses as are still to be found in leases made by ignorant agents. It would be a waste of time to discuss such clauses, but the following is an example found in a lease on Tyneside:—"And shall cultivate such arable land in the following course of husbandry, that is to say—first, one-fourth of the arable land shall be bare fallow or turnips in each year, and shall be managed as specified in the next clause; second, such fallow shall be sown with wheat or spring corn, and at least one-half of which corn shall be sown down with clover and grass-seeds, and the remainder

shall be left for peas and beans; third, that portion of the land which is in grass shall remain at least twelve months without being broken up; fourth, such new grass, peas, or beans, shall be followed by fallow." So that in three years we have got back to fallow which is to be a fourth of the arable land. The framer of the above must have been well up in vulgar fractions. Then it goes on to say—"The fallow shall be ploughed at least five several times with sufficient harrowing, and to be hand-picked if necessary, and twenty fother of rotten dung per acre shall be laid upon the land intended for turnips, and fifteen fother per acre on that part for bare fallow; or in lieu thereof seven fother of clod lime. The tenant is bound to kill the moles in autumn and spring, mow the thistles and rushes, and not to keep more cattle, sheep, or horses on the farm in the last half-year of the term than has been on an average annually kept thereon." The requirement to mow the thistles is the only bit of sense in the clause, and I think might be introduced more generally here with advantage. Seventh: Provides for the keeping and leaving by the tenant, of the buildings in tenantable repair, except the main walls, main timbers, and floors. I think there is much needed some distinct understanding of what are and what are not main walls and main timbers, and the club might with advantage take up the subject at another time. I think the painting of all outside wood-work, such as doors and windows, should be done by the landlord. This clause also requires the tenant to insure his part of the buildings against fire, in the landlord's name. It may suit landlords who have many farms to take their own risk, but a tenant might be put to much inconvenience if not ruined by fire, and the insurance in the landlord's name gives him an opportunity in case of fire to make any improvements he may desire, as well as security that the money will be properly expended. It is a wise thing for the tenants to insure their stock and crops, but it is hardly a landlord's business to compel this. Eighth: Directs that the tenant shall keep and leave in repair fences, ditches, and gates, the landlord finding wood for the gates. This provision is open to question. Many landlords find all the road gates, some provide and hang all gates, and charge the tenants for them; and in both cases we may expect to find gates that will open and shut. Where the landlord finds the wood the gates are often in bad order and badly hung, which does more than anything to destroy them. A tenant farmer on Tyneside, says that most of the gates on a large estate hereabouts are "hung at both ends." There is a provision after this clause in the club lease that, should the tenant neglect to do these repairs, the landlord shall have power, after one month's notice, to enter and do them, charging the tenant. This is a simpler mode of securing the repairs than having recourse to the law to compel the tenant to do them, and I do not see why it might not as well be applied to the repairs of the building also. Ninth: Provides that the tenant shall keep hained and unclean from the 1st of October preceeding the end of the term — acres of the best land, sown with clover and grass during the preceding year, the same to be pointed out by the landlord or in-coming tenant, who shall pay him for such seeds. I think it is well to provide that the tenant shall sow away with seeds in the previous spring such land as comes in course. I also apprehend difficulty arising from the in-coming tenant deciding what is to be hained, and I know that great dissatisfaction is felt by in-coming tenants finding a field hained where the seeds are worth nothing, and their having to pay the seed bill as well as to be kept out of the field till May-day, when it is too late to plough it for peas or other crop. I prefer binding the out-going tenant to hain half his new grass, leaving him to choose which, and having the value of it fixed before the 1st of March, weather permitting, by arbitrators, who can examine the seed bill as well as the ground. This gives the tenant an interest in sowing the seeds as carefully as at any other time during the lease. If the grass is bad, the in-coming tenant has than the option of ploughing them. Tenth: Provides that the tenant shall plough before the end of December all the land that comes in course to be fallowed the next year, being paid therefore by valuation of arbitrators. I think this is better than fixing a price for the ploughing in the lease, as the value of the work varies very much. It is much better that the out-going tenant's horses and men should be working for hire than that the neighbours should be called on to give a ploughing day to every in-coming tenant. Eleventh: Requires the out-going tenant to cast out from the folds to such places as the in-

coming tenant may direct, the dung made in the folds during the last six months of the lease, being paid for the same by the valuation of arbitrators. This is a useful clause, keeping up the regular work of the farm, instead of throwing undue labour on to the in-coming tenant. The club lease, however, adds that the landlord or in-coming tenant should pay half the value of such manure. Now this introduces what I believe to be an entirely new custom into this district. I am not prepared to say that it would be a good custom, for a tenant may find on entry some miserable manure, made from a bad crop of turnips and straw, and may leave the produce of twice as heavy crops consumed with cake and meal, but why should he be paid for only half the manure? If this custom were introduced, however, it would require so much more capital to enter on a farm. Some leases require the tenant to put down the straw during the last half year, with the usual number of cattle in the folds. This is omitted in the club lease; and if the tenant had to be paid for all the manure he had made it would not so much matter, but if he should keep no stock the last half-year and leave the straw to rot, the in-coming tenant would have a bad entry under the present custom as to manure. Twelfth: Allow the tenant to take an away-going crop of all the land that comes in course to be corn. It is to be understood by this that not only the quantity is limited to that allowed in a previous clause, but that it must be in a regular course of husbandry; for instance, if he has not laid his full quantity of fallow the previous year, he is not to make up the deficiency by ploughing out more lea, and leaving his successor an undue proportion of fallow. The club lease also provides that the tenant shall sell to the in-coming tenant or landlord the away-going crop, at a valuation: this means at the time of harvest, which should have been stated. The object of this clause is a good one being intended to do away with the inconvenience of two tenants working together and occupying parts of the same premises for nearly a year after the end of the lease. According to the custom of this country, the straw belongs to the new tenant; valuation therefore applies only to the corn, after deducting the cost of harvesting and marketing. Exception might be taken to the custom of allowing an average away-going crop on land which the succeeding tenant is paying rent for. It causes the inconveniences which this valuation is intended to obviate, and it requires an in-coming tenant to have more capital than if he were to enter and sow the land: but as it is usual here on tillage farms that the rent is not paid for six months after it is due, the custom affords a security for the payment of the last half-year's rent, and is perhaps less obnoxious than the law of hypothec, which has of late so agitated our neighbours over the Border. Thirteenth: Reserves power to the in-coming tenant to enter and sow grass-seeds on the away-going crop, and in the club lease binds the tenant to harrow or roll them in, he being paid for so doing by valuation. This addition is less likely to give rise to disagreements than the in-coming tenant being allowed to work on the away-going crop. Fourteenth: Requires that the thrashing and grinding mills shall be kept in order, and so left by the tenant, who shall be paid for them by valuation. I think it is hardly necessary to bind the tenant to keep these machines in repair, for they are his own, and if he pleases he may sell them and hire machinery, and in any case he is only paid what they are worth at the end of his lease. I know it has been complained that an enterprising tenant has to buy an old-fashioned machine, but this is only incidental to the constant improvement in mechanical art, and would in time happen to himself if he carried his first thrashing-machine about with him all his life. Though objections may be raised to this clause, I am inclined to think that it prevents disagreements and waste in removing. Fifteenth: Contains a list of unexhausted manures, for which the tenant is to be paid at the end of the lease. There are in the club lease as follows: For lime applied to the land with the sanction of the landlord during the last year, the cost price at the kiln; in the second year previous to the end, two-thirds of the cost price; in the third year, one-third of the cost price. For undissolved bones applied in the last year of the term, one-half of the cost price; and in the second one-quarter of the cost price. For guano, or other approved manure applied to the away-going crop, one-third of the cost price. In a more backward state of knowledge of the value of manures and feeding stuff I have known other allowances made for the encouragement of farming, but at the present time I

think the allowances in the club leases are very fair. Sixteenth: Sets out the manner in which all arbitrations and valuations are to be made and conducted. Each party is to appoint an arbitrator, and, if they disagree, they appoint an umpire, who is to settle the matters in dispute. I prefer having the umpire appointed before the arbitrators know what the points of difference between them are. Seventeenth: The club lease omits altogether a clause which is in most leases, namely, the power of re-entry in case of non-payment of rent or other payments covenanted for, of wilful breach of covenants, of assignment or bankruptcy, and of failure to sow the arable lands with crops. Whether the landlord should have this power has been questioned. There are people who say that the landlord who supplies the land is like the merchant who supplies guano, or machinist who lets machines for hire, and that he should recover for use or damage at common law the

same as they would do. I would just point out this difference. If the landlord sues for his rent due at May-day, or for damage sustained by breach of covenant, the tenant is going on with another year's occupation, incurring another year's rent, and may be causing more damage. To make the cases parallel, the guano merchant should be bound to let the farmer have another year's supply of guano while suing him for the first, and the machinist should furnish a second machine to be broken while he is recovering the damage done to the former. I had the misfortune to have a tenant who went off in spring, leaving the farm unoccupied and nothing sown. Without the power of re-entering it might have been so still, as he was never heard of again, or it would have been occupied by all the tramps and donkeys in the country as far as I could have prevented it. Many of the covenants which I have noticed would bear more discussion by the club, but already I fear I have trespassed too long on your patience.

RATES AND COUNTY BOARDS.

At the meeting of the South Durham and North York Chamber of Agriculture Mr. GRAHAM said: You will all, I doubt not, have felt through your pockets how very much the payments of the rates have increased these last few years, and you are also aware that those fall entirely on the tenants, as property brings in the same, or rather I should say increased rates, than in those years when rates were so much lower. I now pay above 1s. in the pound more than I did; but who can wonder thereat when we see the large and unnecessarily expensive buildings, whose name is legion, that are erected, and being so over the county. I have often thought it a strange anomaly that so much of the property of this country should be exempted from the payment of rates, and it is high time that we should beatir ourselves to have it removed. You are aware that mines (not coal-pits, though these are far too low assessed for rates), woods, plantations, shipping, the funds, game, and personal property, are all exempted from rates. The time has surely gone by when that state of things should continue; in fact, many have crept in that were never intended to be free. Stock-in-trade is actually liable, but escapes by an Act of exemption that has to be annually renewed. Some may think it will be difficult to get at the various values, but the machinery is already provided by the Government, as nothing can be fairer and easier than the returns from the Income and Property-tax? Why should one part of the community pay all, and the other nothing, towards the maintenance of the poor? All employments have their accidents and worn-out work-people, causing an increase of burdens on the rates. Every description of property should, I think, assist in keeping the poor of the country in which that property is located. Why should a farmer pay rates on the whole of his rental, and the manufacturer only on the rental of his buildings, wherein he is making so much larger and quicker profits? Again, houses have 6 per cent. (of course, including shops, manufactories, &c.) and land has 12 per cent. taken off the rental. Now, there should not be any deductions allowed, as I know they are far from uniform over the kingdom. I will read a few figures from the annual report of the Poor Law Board of 1864-7, to show the great increase in the rates; and very probably an addition will ere long be made thereto in the shape of an education rate, and perhaps what I shall call a turnpike gate one also. I hope the figures will not prove dry to you (I will make them as few as possible), but you will best see from them the great increase. If there be errors they are not intentional ones.

Annual value of real property assessed to the poor rates	£93,638,403
Do. personal, not assessed, far exceeds real property.	
Amount of poor-rate levied in 1841 was ...	3,551,828
Do. do. 1860 ...	9,573,778
	£3,321,944

Now, the average of wheat in 1841 was 65s. 3d. per quarter; in 1864-5-6 the average was 41s. 1d., being 23s. 2d. less, and the rates higher. Who pays those increased rates? whether

the owner or occupier I leave you to say. Since 1834 the increase of expenditure under the head of county-rates is £1,518,636. Until those who have the management of these expenses are chosen from the ratepayers, I fear this expenditure will not lessen, but increase. Although I have a great respect for many of the magistrates, I am quite of the opinion that those composing the "County Board" should be elected by the ratepayers, and also from that body. At present this Board is too irresponsible, and composed as a whole of small ratepayers. I think there should be no ex officio members. It was once mooted to have one half the board magistrates and the other ratepayers; but I am of opinion that whether the members of the board be magistrates or rated inhabitants, they should all be elected. You may depend that when those who pay have to look after the outgoing of the money, it will be more closely looked into. I am asking no favour, but only a right, when I say that every description of property should be rated and those who pay have the say in the expenditure. This is a subject on which so much might be said that I could go on *ad infinitum*; but I think now sufficient has been brought before you to cause a discussion and an expression of opinion. I shall, therefore, conclude by reading the following resolutions, which should be followed up by a petition to Parliament:—1st. That the exception of income arising from personal property, woods, mines, &c., &c., from the poor's-rate is not only unjust, but also impolitic and prejudicial to the public interest, and therefore requires the serious consideration of Parliament. 2nd. That the income-tax assessment affords an economical means for levying the same. 3rd. That the county boards be composed of members elected by the ratepayers, and that the Secretary be requested to communicate with the Central Chamber to ascertain whether they intend to take any action on any of these points.

Mr. WOOLER seconded the proposition. He thought that particular industries should be assessed according to the rate at which they worked out the labourer and consequently made him a pauper. He had found from employing pitmen and agricultural labourers that the pitman, as a rule, was a far older man at 50 than the agricultural labourer at 70. The pitman, therefore, came for relief at an earlier period in life than the agricultural labourer. Then there was the educational matter coming on, and they would want to put that on the ratepayers, which would be unjust. When the change took place in the union law, this town saved the first year £200, and this fell on the agricultural districts. The great bulk of the paupers came from the large towns where manufactories, ironworks, &c., quickly worked out the man, making him a pauper at a much earlier period than would agricultural labour. This, and questions opening out of it, wanted ventilation, in order to being put on a sound basis. Then all public improvements and outlay of that nature ought to be distributed over a period of 60 or 70 years. The highways should come under this category.

These resolutions were carried unanimously.

LAND TENURE AND GROUND GAME.

At the Annual Dinner of the Staindrop Farmers' Club, Major COCHRANE read a paper, in which he said: My own opinion as to the most desirable mode of tenure leans to the adoption of one of two things, either a long lease or yearly tenancy fortified by a compensation clause for permanent improvements effected by the tenant to meet any sudden termination of the tenancy. I must now make a few remarks on the subject of game, as relating to the tenure of land. I know it is a very delicate point with landlords, but I feel that I cannot properly ventilate my subject without some allusion to it. A tenant ought to pay a fair value for his land; this being the case, can it be just or right to keep a large stock of game and make no compensation? If landlords would be satisfied with the same amount of hares and rabbits as our forefathers found sufficient for their amusement, no reasonable tenant would object; but it is now the fashion to kill some unprecedented number of head in the shortest possible space of time. This cannot be achieved without the tenant sustaining great injury. It is only of recent date that the idea of enjoyment has been connected with the practice, not of *sporting* but of *slaughtering* game. When land is in a high state of cultivation (and it is generally only under these circumstances that a landlord can obtain a good rent for his land) it should be remembered that under the improved system of agriculture a tenant has as large a share in the investment of the capital which produces the crop as the landlord has, for he very frequently expends annually a larger sum than the whole amount of his rent in the purchase of manures; therefore the game upon a farm feeds not only on the produce represented by the rent due to the landlord, but also on that increased produce which arises from an expenditure of the capital of a tenant. Hares and rabbits live exclusively on every description of agricultural produce; the former are not satisfied to eat to appease hunger, but, like the *chef* in a gourmand's establishment, they select only the tit-bits, and bite off the wheat at the knots or joints, for the sake, it is supposed, of the saccharine matter they find there, as the grain approaches to maturity. In fact, at no time are the crops exempt from injury caused by hares; they eat the tender blades, and thus retard the growth of the grain, and cause it to come to maturity later than would otherwise be the case; the consequence is that the grain ripens unevenly and the sample is inferior. It is, however, not my object to relate the natural history of hare and rabbit, though I must say they give the farmer sufficient opportunity of becoming acquainted with the nature of their food. I will now give you the result of an experiment made by Mr. Geo. Gayford, of Rymer House, near Thetford, as to the amount of produce consumed by hares and rabbits, compared with that by sheep. The experiment was confined to the question of food consumed, the quantity wasted by hares and rabbits being incapable of accurate determination. A large outhouse was divided—at one end two hogget sheep were kept, at the other 12 large-sized tame rabbits, being about equal in size to hares. The food was weighed and measured to both, and consisted of oats, bran, carrots, turnips, and cut clover. Both were alike well-fed, and had as much as they could consume without waste. It would occupy too much time to give the full particulars of this experiment, so I will state them as concisely as I can. The sheep during six weeks consumed 48st. 10lbs. 8oz. weight of cut clover, bran, carrots, and swede turnips (valued at 13s. 9d.). During the same period the 12 rabbits consumed 68st. 7lbs. 14oz. weight of the same description of food (valued at 18s. 2d.). The sheep weighed at the end of the first fortnight 11st. 8lbs., and the rabbits 5st. 12lbs. At the end of the second fortnight the sheep weighed 11st. 13lbs., the rabbits 5st. 18lbs.—increased weight of sheep 54lbs., rabbits 14lb. The greater increased weight of the sheep may in some measure be attributed to the rabbits being males and females, and consequently did not settle so well as the sheep. At the end of the third fortnight the sheep weighed 12st. 5lbs., and the rabbits 5st. 9lbs.—increased weight of sheep 54lbs., decreased weight of rabbits 84lbs. This decrease is accounted for by the rabbits having begun to breed. From the foregoing it will be

seen that the 12 rabbits exceeded the two sheep in consumption of food by nearly 23 stone weight (valued at 4s. 6d.); it follows, therefore, that 44 rabbits during a period of six weeks consumed as much as one sheep. In this estimate no allowance is made for that which is destroyed by hares and rabbits. Sheep are generally fed on a particular spot and eat what is given them, wasting little. With wild creatures the case is different; they waste more than they eat. I this year witnessed the effects of a trial made by a friend of mine which to my mind fully bears out the truth of the results of the experiment I have described. He enclosed a portion of a clover field with a game-proof fence, and I can, without exaggeration, state that the enclosed portion yielded considerably more than double that of the unenclosed. In a former part of my address I stated that I believed most tenants would not object to a moderate quantity of hares being kept on their farms. I have endeavoured to explain the damage caused by them in the hope that landlords will, on account of the interests of their tenants, be content to keep a moderate supply of these animals; for I am sure that any pleasure they can derive from the wholesale slaughter of them cannot compensate for the great injury they inflict on their tenants. If landlords are bent upon having grand battues and killing a great quantity of game, I think I can show them how they can accomplish it without causing that great injury to their tenants, at the same time affording more amusement to their friends. Pheasants may be reared in any quantity. It is simply a matter of £ and d. Now, as these would be bred and fed by the landlord, the damage a tenant would sustain on their account would be small, in comparison to that caused by hares and rabbits. They, as I said before, would be fed by the landlord; whereas the tenants are victimized by the hares and rabbits. The pheasants would in a great measure only eat that which was given them, without much waste. The hares, on the contrary, destroy much more than they eat. All the fields surrounding these great preserves should be laid down in pasture, the cultivation of which the tenant need not expect much of his capital, so that, at the worst, he would only lose the rent he pays; but on tillage land this is quite different: he loses the value of the rent he pays, labour, expenses, &c., &c. In further recommendation of my proposed plan for substituting pheasants for hares and rabbits, I think I may fairly say that most gentlemen prefer to shoot the former to the latter; and it is not unusual for a sportsman to allow hares to pass him by, rather than lose a chance at a pheasant. In confirmation of this, I will relate what took place in a wood not far from Selaby. There was a large party of shooters; and the tenant of the adjoining land came prepared with a thick stick, to assist the beaters in driving the game, probably also animated by the hope of seeing a good many of his enemies slain; but his disgust may be better imagined than described, when he saw the hares that were driven to the guns allowed to canter past without notice, and, on his imploring appeal to the gentlemen to shoot them, he was answered by the remark, "We do not care about shooting hares: we prefer winged game." I now come to that part of my subject, the security of the capital of the farmer, whether, under the designation of "compensation for unexhausted improvements," or more briefly "tenant-right." An occupier of land seldom invests his capital with a prospect of an immediate return. He does not anticipate that a large expenditure in cleaning and enriching worn-out land will be all repaid to him in his first rotation. He hopes to lay the foundation for a series of improved crops, and thereby expects to be repaid with interest. If he drains, makes new buildings, new fences, or other improvements of a more permanent character, it will require a still longer period before he can be repaid. A tenant should, therefore, either be secured in the possession of his farm for a period sufficiently long to enable him to receive the benefit of his investment, or have some agreement under which he is to be repaid in fixed proportions for his outlay, in case his landlord should see fit to resume possession of his farm. Without either the one or the other, no prudent man will invest largely

in the cultivation and improvement of the property of another. No doubt great agricultural improvements have been made, and tenants do in many instances invest their capital largely, with no other security than the confidence which subsists between landlord and tenant, which is honourable in the highest degree to both parties; and I believe in no other business connexion is there so much upright dealing on trust. I think it was Arthur Young who remarked, "Give a man secure possession of a barren rock, and he will convert it into a garden: give a man a six-years' lease of a garden, and he will, by the expiration of his lease, have reduced it almost to sterility." With regard to tenant-right, I am totally opposed to any legislative interference between landlord and tenant, as it would injuriously affect the rights of property, and certainly not benefit the tenant. At the same time, I am strongly in favour of a proper, binding agreement between landlord and

tenant, that would protect their mutual interests. Were the proprietors of some large estates to introduce a proper and well-devised agreement on tenant-right amongst those farming their lands, it would, I firmly believe, on account of its great success, soon become general in this country, like all other salutary regulations affecting the tenure of land. The contract entered into between landlord and tenant in agriculture may be described as an agreement for the employment of one capital upon the other. The capital on one side is a fixed one—viz., land: that on the other side is a floating one, to be employed by the tenant in the cultivation of his land, a part of which capital gradually becomes fixed as it is from time to time invested in the land, increasing its productiveness by operations more or less permanent in their nature. At the present moment tenant-right does exist in some counties.

LEICESTER CHAMBER OF AGRICULTURE.

A meeting of this chamber was called, for the purpose of discussing the Metropolitan Cattle Market Bill. Mr. T. Wright presided.

Mr. HARRISON said the present bill was not at all what they required; they wanted a bill to exclude all foreign cattle. There were many reasons at this time why it was most important a proper bill should be brought in. At present they were lighting the candle at both ends. They were aware that the best cows generally went to London, and a great many people there kept 400 or 500 of the best cows that could be found. In former times the calves produced were distributed through the counties of Essex, Kent, and all over the country, and reared so as to supply a great demand in the market; but under the existing regulations, foreign and English cattle being mixed together, no calves were allowed to leave London alive; and on account of this they were not now worth half-a-crown apiece in London. The consequence was that many calves had been killed and buried, because there was no market for them. The price of milk was so high in London that it would not pay to rear calves—in fact, the people who had their milk-walks were not rearers of calves. If Parliament would grant a separate market for English cattle, which he hoped they would, this thing could be obviated. If all foreign cattle and sheep were slaughtered at the waterside, all these calves could take their natural course to the farmers in the different districts round London, and help to supply the demand for cattle. At present the graziers of Leicestershire were suffering most materially in this way; those men in Essex and Kent who had been in the habit of rearing these well-bred English calves were not able to get them, and consequently had to go to the markets in Wales and everywhere else, and buy the cattle which were wanted in Leicestershire and other midland counties. They must impress this upon Parliament that in any measures of this kind every out-port where foreign cattle were landed must be embraced in the bill, or otherwise it would be perfectly futile. They should also impress it upon the Central Chamber that their members should be in their places to support such a measure, and he regretted that some of them were not present that day, as he believed nearly all were members of the chamber. There must not be any lukewarmness in this case, for if their members did not support them this time they would be of no use to them. Half measures were of no use, and they must support their own interests, or they would certainly go to the wall. He proposed the following resolution: "That this chamber regards with satisfaction the Metropolitan Foreign Cattle Market Bill, now before Parliament, for establishing a separate market for the sale and slaughter of foreign cattle; but considers it essential that this bill should place all foreign sheep and pigs on the same footing as foreign cattle, and that the same regulations should apply to all other ports of landing in the United Kingdom."

Mr. W. WRIGHT seconded the resolution, and in doing so reminded the chamber of the mischief that had accrued from the introduction of foreign cattle into the country, and condemned the opposition to the bill, which had been mainly got up by the butchers and cattle salesmen of London.

Mr. STRIDE (London) expressed himself in favour of Mr. Harrison's propositions. He thought all foreign cattle ought to be kept at the port of landing. The only difficulty he could see was as regarded the port of London. He considered the restrictions on the home cattle trade in the Metropolitan Cattle Market had given the market a monopoly of the foreign trade. Imports had more than doubled since the rinderpest broke out, and that market had been supplied with foreign cattle, to the exclusion of English. He contended that the restrictions ought to be on foreign, and not on English things, which should have more freedom. The butchers had found out the result of these restrictions, and those who formerly would not have a foreign animal in their shops would be obliged to do so; they found that they could buy them at a much less price, and sell at the same as they were selling English meat, and therefore they had had a great benefit from it. The foreigners were now making very great efforts to retain the monopoly of the London market; and their suggestion that the selling of foreign cattle should be confined to the metropolis was only that they might have all the trade to themselves. That must be altered, and they must keep the foreigners to their own market. Then they had the butchers: the only thing the butchers feared was compulsory slaughter. If compulsory slaughter were imposed on the foreign market, they said it might be on the English; and if they took away a butcher's slaughter-house, it annihilated his trade; it was the slaughter-houses the butchers were afraid of, and nothing else. They said they did not care about the rinderpest, or anything else that increased the price of meat; but they were not going to submit to their slaughter-houses being taken away. Compulsory slaughter in the foreign cattle market would be opposed very much. If they could suggest any plan to confine the foreign meat to certain districts, it might obviate the difficulty.

The motion was carried.

Mr. PELL moved that the petition be adopted, sent for signature to the various markets in the county, and then forwarded by the secretary to some member of Parliament for presentation.

The motion was carried.

Mr. HARRISON moved that copies of the resolutions be sent to the members for the county and borough of Leicester, and for the county of Rutland, with a request that they would support the views of the meeting in their places in Parliament.

The motion was carried.

Mr. WILLSON said, besides the education question, which he hoped would be discussed on the 29th inst., there were two other things he was anxious to have discussed. One was the rating question as suggested by Lord Berners, and the other was the Turnpike Trusts Bill. He had been inundated with papers from all parts, desiring a discussion of the latter before the second reading. He had also received a petition, which declared the bill to be unjust, as imposing an unfair burden on the ratepayers, while the users of the road would escape altogether.

The meeting was adjourned to the 29th, for the purpose of discussing the Turnpike Trusts Bill.

The annual dinner of the Chamber was afterwards held at the Three Crowns Hotel, under the presidency of Mr. T. Wright.

Mr. PELL responded for the Central Chamber, and said they had not made it their object to take up what were called grievances. They did not think the British farmer presented himself in the most favourable circumstances, when he was in top-boots and tears. He did not in this way elicit the respect and sympathy of his countrymen; but he had an undoubted right to come forward as a man who claimed to be heard through an institution of this sort, to tell what he wished to obtain, and to take the best means of obtaining it. And therefore in the Central Chamber they had avoided many subjects which might have given occasion for a great deal of talk, but out of which would have come very little result; and certainly the questions which they had discussed had been dealt with with considerable effect. In some of their early meetings at the Central Chamber, it was discussed with some warmth whether they should stick to the league principle or

not. He considered a league to be a number of persons who came together with pre-conceived opinions, opinions that it would be difficult to shake by arguments, and being agreed upon some particular point, made use of the term league merely as a bond of association, not as an instrument for open discussion, but as a means of forcing their peculiar opinions upon their fellow-creatures. That was what they would not do. At first the idea was that they should be merely occupiers of land; but he told his friends that if they confined it to occupiers of land their institution would fall to the ground. But it was urged that they might be swamped by the landlords; and he replied that it would be their own fault if they were, and he could not believe for one moment that the landowners as a body of English gentlemen were so insusceptible of impression by argument that they would lend themselves to oppose the men by whom their rents were paid. He did not think they could bring many landlords to their meetings, but he would not exclude them; it was much better that they should be present and hear the information their tenants had to give. This suggestion was acted on, and they had not suffered from it in any way.

THE MIDLAND FARMERS' CLUB.

At the annual meeting, Mr. R. H. Maafen, President, in the chair, Mr. Ford was elected President, Mr. May Vice-President, Mr. Lowe Honorary Treasurer, and Mr. Lythall Secretary, for the ensuing year. Trustees and a committee were also appointed.

The PRESIDENT read the following resolutions in reference to Mr. Fawcett's Bill, which were passed at a meeting of the Club held in the month of June last: "That, whilst admitting the desirability of extending the facilities for the education of the children of agricultural labourers, this Club cannot agree with the provisions of Mr. Fawcett's Bill, and disapproves of any hasty legislation on the subject." "That in the opinion of this Club all children between the ages of five and ten years should be required to attend school for a certain period in each year." "That, considering the national advantages to be derived from education, the expense of providing the necessary school-accommodation ought to be defrayed out of the public purse."

Mr. MAY read a paper on "Agricultural Shows: their Object and Management." He had selected the subject for two reasons—one, that he might amplify and explain some remarks which he made at Lichfield a short time since; and the other, because he thought that if it was deemed prudent or advisable to make any change in the management of our agricultural shows, the present was a favourable time to do so, as, after a rest of two years, a change would not be so apparent. The subject naturally divided itself into two parts—fat stock and store stock shows. Of the former little need be said, except in praise; London and Birmingham taking most, if not all, honour. Another division, however, seemed inevitable—national and local shows. Of the Royal he knew but little, though he had been a member of the society for nearly twenty years; but that it was a right royal show no one who had attended its meetings could deny. That it had done great good by disseminating scientific and practical information was admitted by all; but whether it had done as much good as it might have done with its patronage and the funds at its disposal was doubtful. Numerous as its subscribers were, they were not a fractional part of the farming interest; and the question would be asked—Why is this the case? He had heard thoughtful men say that its Council wanted fresh blood of the tenant-farmer class; and, indeed, on looking over the list of names, there did appear a large proportion of noblemen, M.P.s, scientific men, and manufacturers of implements. One would naturally suppose that there ought to be one good tenant-farmer from every county in England on the Council, so that its cultivation, interests, and peculiarities might be represented. However, as Englishmen, they might be justly proud of the society as being the first of its class in the world. With regard to local shows he thought they ought to be county ones, and for store stock only. One good show in each county would, he imagined, be amply sufficient to re-

present and improve its stock and cultivation. Most of the small local shows were but excellent opportunities for compliments, eating, drinking, and speechifying: competition—properly so called—was out of the question. A county society, with its district branches for field and fold work, seemed the right idea, but how to carry it out? To begin with, he had no doubt that all local shows should be confined, as he had said, to store stock, and this stock ought to be shown in healthy store condition. London and Birmingham were the places for fat stock, and Christmas the time for exhibiting it. What was wanted at the local shows was specimens of the best breeding flocks and herds. Of course good males were the first consideration; but here they met with a great obstacle to their store ideas. Male animals, whether horses, bulls, rams, or boars, were usually shown as fat as they could be made. Whose fault was this—the breeder's or the purchaser's? The purchaser's mainly; for whilst buyers selected male animals with every bone hidden and with skins as soft as a mole's, and hair or wool unnaturally fine, breeders would feed, and house, and clothe. Even our valuable Shropshire sheep, so noted, and justly, for a very large proportion of lean meat, were, he feared, losing this characteristic from the false taste of the day. The highest prizes a society could afford ought to be offered for male animals, for there was the nation's sheet-anchor for food, and breeders would not exhibit in force without probable remuneration. The lately-introduced fashion of jumping hunting horses he took to be a good one, as proving the temper and performance of the animals, and being moreover a source of great attraction to visitors. Perhaps there was now a fashion of offering too many prizes. Better a few and good ones, than many and worthless. What was wanted was a fair sample of a man's herd or flock, not a small fraction of it prepared on purpose for the judges' hand and the public eye. As a rule the exhibition of very young stock he took to be an error. Heifers ought not to be shown in less numbers than pairs; and four are not too many for milking cows or cows-in-milk. In judging this class of animals great attention ought to be paid to their milking properties. Of course good frame and good flesh were desirable; but milk being the qualification aimed at, shape, size, and flesh were of secondary importance. Ewes ought to be shown in pens of ten or twenty, and if heifers or rams must be exhibited, the same remark would hold good. Clipping or unfair shearing should be stringently discontinued. The object of all agricultural societies being improvement, any man much in advance of his fellows ought to receive especial notice or favour. The mode of distributing prizes in the implement department he did not understand. Intelligent men were usually chosen as judges; but how could they judge unless they had an engineer at their elbow, and a dynamometer at command? How many men who act as judges of implements at our local shows have any mechanical knowledge, properly so called? Few implements are tried, and

though he admitted that as a rule no men are such good judges as the practical ones who try the implements on their farms, yet how can they do this in the show yard? Perhaps the safest and best prizes to be given in this department at our local shows would be for the best general exhibitions, and as a rule it might be safe to follow the decision of the Royal in all new implements. With regard to the corn and roots, he presumed that six turnips or cabbages or a bag of wheat or barley were aids to success in the show yard, but not proofs of progress on a farm. He was afraid they were no true specimens of the general crop, for the man who won was usually the man who made a business of showing, and not by any means the best farmer. Flowers and music were always agreeable adjuncts to a show. Covered pens and stalls were desirable, valuable animals being often withheld from fear of exposure. All societies should endeavour to have a reserve fund for a rainy day; and, as a rule, shows should be held in populous districts, where there was good railway accommodation. As to the selection of officers, he thought the president should be chosen with reference to the place where the show was held, and be a popular and influential nobleman or landowner. There should be two vice-presidents, both farmers and able men, who would be willing to work. The dinner should take place at three o'clock and not at four, which was now the usual hour. The toast-list he should decidedly curtail, especially with regard to the routine ones. It was a great mistake to occupy the best and main part of the evening with matter foreign to the object of the meeting. The Queen and Royal Family should, of course, receive a loyal and hearty reception; but the next toast—that of The Bishop and Clergy—he should omit; as also the naval and military one. But if it be still thought prudent to retain these time-honoured toasts, let them be given without acknowledgment. The toasts of The President and Success to the Agricultural Society should be put into the hands of an influential and intelligent gentleman, who should take the opportunity of expressing his own particular views upon farming. There were many very important subjects which might be introduced, and which could only be discussed and ventilated on such occasions, simply because the same people do not often meet. The weight and authority of the opinion of an influential president might modify and improve many matters, or at all events induce conversation about them. The other toasts might follow in much the same order as now; but according to his plan the first and best part of the evening would be devoted to the most important toasts, which was not now the case. Mr. May concluded with some suggestions as to the topics which might be discussed at the dinners—such as the American method of cheese-making; the French method of rearing and feeding poultry; the meat supply and the importation of meat dead and alive; game, labourers' cottages, village schools, rural life abroad.

Mr. LOWE was of opinion that some of the societies had been very useful in the immediate neighbourhood in which exhibitions had been held. He agreed with Mr. May as to the over-feeding of store stock, and that the purchasers themselves were responsible for it. With regard to the exhibition of implements, he was sorry the Royal Society had latterly allowed the introduction of so many toys and gim-cracks into the show yard, that it looked more like a bazaar than an agricultural exhibition.

Mr. BROWN thought agricultural shows had been greatly instrumental in improving the breeds of cattle in this country, and that they had given the agricultural community opportunities of selecting implements which would enable them to carry on the various operations of agriculture in a manner not only advantageous to themselves but beneficial to the public at large. This being the case he regretted that there were many farmers who would not join those societies, and one of the chief objections which they urged against doing so was that the management of the shows was too much in the hands of exhibitors. He did not know how far this could be avoided; but he himself believed that it was of some importance that the principal exhibitors of stock should not be asked to take the chief part in the management of the shows. He concurred with the remarks of Mr. May that some of the routine toasts at the dinners might be very well dispensed with; for it must be borne in mind that farmers often come from very remote parts, and but for once in a year, and who did not want to hear dry details of what they knew but little about, but yet would be delighted to listen to something which

appertained to their own occupation and calling. He moved that the thanks of the meeting be presented to Mr. May for his very able and interesting paper.

Mr. J. B. LYTTHALL, alluding to the remark in the paper that heifers should never be exhibited in less than pairs, said that the Herefordshire Society had adopted a plan, with reference to female stock, of handicapping exhibitors, every one of whom was required to show two animals for every 50 acres of land he occupied. At one meeting of the society the Rev. Archer Clive exhibited no less than twenty-six breeding cows as his quota. This plan gave small occupiers as good a chance as the larger ones. As to sheep, he had lately visited the neighbourhood of the Cotswold Hills, and the farmers there were of opinion that the Royal Society had injured their breed by requiring so much fineness of coat in animals sent for exhibition, and that to meet these requirements the sheep were becoming much less robust and hardy than they formerly were.

Mr. FOWLER remarked that the system of handicapping, to which Mr. Lythall had alluded, would be only practicable at strictly local shows, as the conveyance of many animals would cost too much.

Mr. WRIGHT, in seconding the motion, said that handicapping, as a rule, was injudicious, although there might be cases in which it was desirable. With regard to the deterioration of the Cotswold sheep, alluded to by Mr. Lythall, no doubt the remark might be right in respect to that particular kind of stock; but he might mention, as applicable to a point touched upon by Mr. May, that in the early years of the Birmingham Show the only local considerations which at all influenced the managers were in regard to Shropshire sheep. To this breed a distinct class was allotted—a step which had proved one of the most important ever taken by the Birmingham Society; and everyone would admit that its results, as evinced during the last seventeen or eighteen years, had been most beneficial. That it was possible to feed Shropshire sheep too fat for useful breeding purposes he would accept upon the authority of a practical man like Mr. May; but—and this was one of the great points in favour of the breed—the mutton from them never came to table too fat; and there was no question but that the liberal feeding of young stock had been one of the most active causes in its improvement. With regard to the management of agricultural shows, he should feel rather diffident about making any observations, especially as it seemed to be generally considered that these matters should be left in the hands of those who were practical agriculturists, if it were not for the fact that he himself and a few fellow-townsmen had set to work to organise the Birmingham Society, not from any impression as to their own abilities, but at the period referred to they had not that intimate acquaintance with many intelligent agriculturists which they had fortunately obtained during the last fifteen years; and if they had waited for the farmers to move in the first instance the show might never have been established. The first question which came under the consideration of the Council was that of classification. Although the Smithfield Club had then been in existence some thirty or forty years, the Birmingham Council took a great step in advance of them by adopting the system of classifying animals by breed instead of age—a system which the Smithfield Society speedily adopted. The arrangement of a prize list—which at first sight seemed a very simple matter—was in reality a work of great importance, and one which required very careful consideration. Indeed, a prize-list should never assume a settled form; for nearly every year, and in nearly every department, some changes were found to be necessary. Probably at the next meeting of the Council of the Birmingham Show some further changes would be deemed advisable; and he was of opinion that the county societies had erred in laying down certain rules, and adhering to them, year after year, in a spirit of opposition to all change. He thought the great benefit derived from the changes made in the national and larger societies should be an example in that respect to the local ones. He was also of opinion that county shows should be made as complete as possible; and, with all deference to Mr. May, he held that the exhibition of roots and corn was a very important feature in every respect. He (Mr. W.) had conversed with farmers in reference to this department of the show in Birmingham, and they considered that no part of the work done by the so-

ciety was more important, or had been more beneficial. The roots exhibited were, no doubt, picked specimens, and the corn also might be selected; but still, the roots must be the heaviest, and the grains of corn the largest and of the best quality, to obtain the premiums. If specimens of any root weighing say 15lbs. were exhibited, when 10lbs. was generally supposed to be the greatest weight attainable, improved cultivation was thereby stimulated, and what were formerly looked upon as exceptional soon became only average specimens. Indeed, it would be found that the maximum of size and quality ten years ago was not the average now. With regard, also, to the selection of corn, it would be wise not to complain, but rather, perhaps, to buy a sample, even at the price of a guinea a bushel, and to follow out the plan of selection on their own farms. With regard to the Birmingham Show, it had only recently occurred to him that it would be advisable to alter the present non-classification of potatoes, by which a small ash leaf was often placed next in competition with a "king"—an incongruity which might be remedied by the adoption of some general system. Concerning the dinners connected with agricultural exhibitions, he thought the opportunity should always be taken of explaining, clearly and distinctly, the aims and objects of the society, and that some one gentleman should be invited to offer remarks upon its strong and weak points, and, perhaps, suggestions as to the manner in which its usefulness might be further increased. A practical agriculturist, land

agent, or landowner, would always have something to say upon one or other points connected with the agriculture of his own neighbourhood; and in this manner much valuable information would be elicited. In conclusion, Mr. Wright, referred to the county shows, expressing his belief that they were unquestionably improving every year, and that many of them were now equal to what the Royal Show once was; and he was also glad to perceive that there was evidenced in every part a desire to make them as practically useful as possible.

The PRESIDENT concurred with Mr. May in the opinion that the council of the Royal should be mainly composed of practical men. He admitted that the council now contained some very able men; but still he had heard from some of its members that the greater portion of the work fell upon the few. He thought, however, this was entirely their own fault, in that they did not have a larger number of practical men to assist them in their endeavours to make the society as widely useful as possible. He corroborated Mr. May's remark that if store stock were now usually fed so fat as to be incapacitated for breeding purposes, the blame must be laid upon the purchaser, and gave it as his own experience that it was absolutely necessary to fatten rams before it was possible to find customers for them. He did not think the exhibiting of stock in large numbers was at all practicable, as no man would be willing to drive say twenty or thirty cows or sheep a distance of some fifty miles for the sake of competing for a premium.

WHEAT IN AMERICA.

[TRANSLATED FROM THE FRENCH.]

The American journals are much occupied with wheat, and an agriculturist of the State of Indiana, Mr. Louis Bollman, of Bloomington, has devoted a very long and interesting article to it, which, without going back to the Deluge, is not less diligent in searching out the origin of the culture of wheat in the New World. He attributes it to a companion of Cortez, who finding some grains of the precious cereal in a bale of rice brought from Spain, sowed them, and obtained a crop, the descendants of which covered the fields of Mexico, and all the countries to the north of the Pacific. However this may be, the introduction of wheat into the Island of Elizabeth (Massachusetts) dates from 1603, and from 1614 into Virginia; in 1718 it extended itself to the Valley of the Mississippi, and in 1746 New Orleans received by the Wabash the first cargoes of wheat. Such has been the commencement of a commerce which must occupy a most important position in the annals of the Western States, and which has rendered the free navigation of the Mississippi so essential to their prosperity that it has become with them a question of life or death, and that any sacrifice, however costly, must be made to maintain it, in spite of all the political revolutions and violent changes they may be subject to. Seeing that the wheat crop of the United States does not exceed 170,176,020 bushels (21,272,003 qrs.)*, whilst that of maize has risen to 822,694,528 bushels (102,836,816 qrs.), according to the census of 1860, the first occasions an amount of business and represents a commercial value that are not much exceeded by that of the second.

The region of wheat in the United States extends from the 33rd to the 43rd degree of north latitude. It embraces Ohio, the southern part of Michigan, and New York, all Pennsylvania, Maryland, Virginia, and Delaware, which have become the chief centres of the culture and production of wheat. The first rank belongs, without dispute, to Ohio, the crop of which reached in 1850 the sum of 28,000,000 bushels, which represents about 16½ bushels per head of the inhabitants. The argillaceous soil of Ohio, which reposes upon a subsoil of an equally clayey nature, produces therefore 16½ bushels per head of the population; whilst that of Indiana, with a more fertile soil yields only 8½ bushels; and that of Illinois, with a soil still richer than either, does not exceed 7½ bushels. Virginia, Maryland, and Delaware, as well as New York, formerly

produced considerable quantities of wheat; but on many points of New York State, the ancient return of 25 bushels per acre has fallen to 5 bushels; and in Maryland, Virginia, and Delaware, a great number of localities are mentioned, in which the culture, formerly very productive, will no longer cover the expense. It is the consequence of that system of exhaustion of the soil, for which the agriculturists of both the United States and of Europe have so much reproached the American farming, and which, in spite of the interested protestations, has now become *un fait accompli*, bearing the characteristic name of "*culture à l'outrance*," and "*l'empirisme*," according to the energetic expression of Baron Liebig.

With the question of the production of cereals is closely connected that of openings and means of communication. Now, before 1850, the North-Western States scarcely dreamed of that network of railways which has since covered and furrowed them. The most enterprising minds imagined nothing beyond one line which might place the Eastern States in communication with Saint Louis. But the example of England was not long in reflecting itself on the other side of the Atlantic, and in a few years the transformation was complete. The influence of railways over the development of production is truly marvellous: it has acted with the rapidity of lightning, and uncultivated regions have been covered, as by enchantment, with rich fields clothed with the appearance of a garden. The spirit of enterprise has seized the farmers, and this revolution is marked by facts, the recital of which would lead us too far, but which bears witness to the activity and indomitable energy of the American pioneer.

In comparing the table of ways of communication on the Western States in 1850 and 1860, we may obtain an idea of the progress that agriculture, and particularly the production of wheat, have accomplished in that decennial period:

	1850.		1860.
Michigan...	342 miles	.....	799½ miles.
Wisconsin...	20 "	.....	933½ "
Iowa	0 "	.....	679½ "
Illinois.....	110½ "	.....	2,868 "
Indiana ...	236 "	.....	2,136 "
Ohio	575½ "	.....	2,999½ "

We may say that in the rich valley of the Mississippi the extension of the culture of wheat is in exact proportion with that of the means of transit, and that the wheat region

* In 1867 the wheat crop, according to the official returns, was estimated at 225,000,000 bushels.

in the United States has no other limit than that of the network of railways. The line projected from the Pacific is destined to carry life and wealth to the uncultivated plains it will encounter in its course.

Seeing that in the last decennial period the production of wheat in America has increased about 70 per cent., the price has never maintained a maximum so advantageous to the producer. It is not that the American market has been free from fluctuations, or that it has not had its seasons of decline in the price of wheat, as well as in all other commodities; but the average has never fallen below a rate sufficiently remunerative without reason to attribute that phenomenon to any other cause than the increase of the consumption in the interior and the importance of the foreign demand. If the demand for the interior had only increased in proportion with the population, the average prices would not have reached so high a figure. But at the same time the population became more numerous, the extraordinary development of manufacture opened to agriculture new channels of disposal. To judge of the importance of that movement we shall go back to the statistics for 1860, which will enable us to follow, in the State of Ohio, for example, the simultaneous progress of agriculture and manufacture, and to estimate the rapidity of their parallel march. Now, whilst the production of maize increased 18 per cent., wheat 20 per cent., horses 63 per cent., cattle 40 per cent., and pigs 15 per cent., metallurgic manufacture exhibited an increase of 300, and other manufactures 90, and the mercantile marine 260 per cent.

What is now the importance of the openings offered by the foreign markets? The examination of this, and showing how he appreciates the importance of the foreign wheat trade, will conclude the review of Mr. Bollman's work.

The author first reminds us that in an article on the production and consumption of wheat in Prussia, Mr. Judd, the American Minister at Berlin, remarks that "the official statistics had not stated exactly the amount of the returns of wheat in the states of the Prussian monarchy, and that all the attempts to furnish the details for remedying this defect in the information had given no results." We know how little foundation there was for this assertion; for lastly, again, this journal published, according to the *Belgian Monitor*, an estimate of the harvest in Prussia, emanating from the Prussian Government itself, and conformable with the documents of the same kind published every year at the same period. But if (thanks to the precision of its administrative mechanism and the zeal of its official statisticians) Prussia has been enabled to make an inventory of its agricultural wealth and to give every year an approximate valuation—a per-centage of the result of the harvest—Russia is much behindhand in this respect. We can understand that the immense extent of its territory, the diversity of races by which it is peopled, the almost infinite variety of the idioms that are spoken in it, and the difficulty of the communications, render it very difficult to collect documents on the production of cereals, and especially to publish them at the proper time. After having deplored this blank, which we regret with him, the American author goes into long and minute calculations in order to establish the balance-sheet of the production and consumption of cereals, and particularly wheat, in the principal states of Europe, and concluding from it the extent of the demand that the American producer may be called upon to supply.

Naturally, England offers itself to him in the first place, for the wants of the United Kingdom are incessant, and it is only by means of a regular importation that it can supply the wants of its consumption. Now things were not always presented in this state amongst our neighbours; for in 1792, for example, they imported 209,225 bushels of wheat, and exported 2,902,591 bushels. That was also the last year in which the exports exceeded the imports. From that period up to 1846 (thanks to the rapid increase of the population and to the prodigious development of the manufacturing industry) the amount of the annual deficiency has constantly increased, and it oscillated between 5 and 28 million bushels. In 1846, when the potato disease had still more aggravated the consequences of a bad harvest, the importations rose to 24,793,564 bushels, or 43,514,921 bushels including flour. In 1839 England imported 28 million bushels of grain, of which wheat figures for 26 millions, furnished chiefly by the states of Continental Europe—say, Prussia, Germany, Russia, Italy, France, Denmark, and the Low Countries.

Mr. Lewis Bollman regards France as in a condition to supply the wants of its consumption. He says as much of Prussia, which in 1839 contributed the largest portion of the English supply; but he speaks of this circumstance as quite an exceptional thing, and ranges Prussia with France in the category of those countries that can habitually depend upon their own resources, but do not offer a considerable excess disposable for exportation.

With a population of forty millions, Austria produces annually 94,824,681 bushels of wheat; and as the consumption is 24 bushels per head of the population, it consumes 90,000,000 bushels, leaving only 4,824,681 bushels for seed; from whence our author concludes that it must draw from Poland and Russia the wheat which it sometimes exports to England.

In regard to the resources disposable for exportation Mr. Lewis Bollman places the rest of Germany and Italy on the same footing as Austria and Prussia. He admits also that in the centre of Europe the potato occupies a large space in the alimentary regimen of the inhabitants, and that this circumstance may contribute to an increase of the disposable grain for exportation; but he observes also that the attack of the disease in 1845 has rendered the crop very uncertain, and that consequently England would run a great risk of being deceived in her calculations if it looked to that quarter for the completion of its foreign supplies.

Alone therefore, of all the continental states, Russia produces much beyond the wants of its consumption. The Southern provinces of the empire are the true granaries of European abundance, and the production of wheat there is only limited by the vices of the system of husbandry, and the insufficiency of internal communication.

After having thus regulated the amount of each, Mr. Bollman naturally turns upon himself, and points out to the American producers the vast field opened to them in the markets of Europe. He therefore directs their attention to the cultivation of wheat, and enters upon this branch of the subject with technical details, which we shall dispense with recording. He speaks of the nature of the soil which is favourable to wheat, of its composition, and concludes with very interesting considerations on the enemies which threaten it. But the warnings and good advice he lavishes on Russia may perhaps be acceptable to those around him; for it is not well proved, in spite of the incidents of a polemic carried on in our columns, that the American cultivator is not himself subject to grave reproaches, and that by the generalization of his system of exhaustion of the soil to the utmost, he does not kill the goose for the sake of the golden eggs, and thus prepare for himself bitter regrets on the very near future. The lesson is worth the trouble of studying, and the example of Australia affords one proof more of the serious inconveniences of a system which the most eminent of American agriculturists themselves have severely condemned.

E. CHEREU.

THE LATE MR. JOHN GREY, OF DILSTON.—At the meeting of the Hexham Farmers' Club, Mr. Joseph Lee, Dilston, said that since the last meeting of the club it had pleased the Almighty to remove from them their chief supporter, and they deeply felt their loss; but they must be thankful he was spared to them so long: for during the last twenty-two years he was very seldom absent from their meetings. To the young members he (Mr. Lee) might say that they should have known the late Mr. Grey thirty years ago to be able to appreciate his great value to the farmers and also to the whole community. He was remarkable for his activity and great abilities. It was fortunate for him to have lived so near Mr. Grey. He went to reside at Dilston 33 years ago; young, and without much experience, the instruction he received from Mr. Grey was of great value and benefit to him. Mr. Grey not only possessed great knowledge, but he had pleasure in communicating it to others. He moved that the following resolution be put on the minutes of the club: "That the members of the Hexham Farmers' Club sincerely regret the death of Mr. Grey, the founder and chief supporter of the club, and also their distinguished president for 18 years, and that they deeply felt the loss." The motion was seconded by Mr. T. P. Dods, carried unanimously, and acknowledged by the chairman, Mr. C. G. Grey.

DRAINS AND DRAINAGE.

The care of all the drainage of the farm is one of the most important items of farm-management in the winter season. Effective drainage is of wonderful advantage in agriculture, and is one of the greatest improvements in farm-practice of modern times. Surface-drainage has been carefully attended to from time immemorial. Subsoil-drainage is comparatively of modern adoption, and is greatly varied in practice; both systems or departments of this drainage ought periodically to undergo the most careful supervision, or much loss of cropping will occasionally ensue. In every dead-level district it is of the highest importance to keep the leading or outfall drains in a clear and effective state. These outfalls would mainly consist of open ditches by the hedgerows, which, if not frequently attended to, speedily land up; they therefore ought to be fully cleansed out every season, and the ends of the subsoil-drains set free to utter their waters without obstruction. Subsoil-drains on a dead-level can only utter their waters as the outfall drains or ditches run their waters off; hence every facility should be provided for their free working. Nearly every district of marsh and fen has followed the upland districts, and have adopted subsoil-drainage, and also with immense benefit. This subsoil system not only drains the soil, but it adds greatly to its fertility by permitting or enabling the rains and melted snows to pass through the surface soil to the subsoil, and thence to the outfall ditches, leaving in its passage a large deposit of ammonia; but if this passage is impeded, the waters become stagnant in and upon the soil, and do great hurt instead of good: in the fens and marshes this is very observable. Being on a dead-level the drainage is more gradual than down an incline, as the upper country presents; therefore, the deposit of atmospheric influences brought down by the rains and snows is greater, and is more effectively diffused and absorbed by every particle of soil. Moreover, all the falling waters pass through the soil to the subsoil, and not off from the surface, as down most inclines; it is, therefore, more especially incumbent upon the farmers of such dead-level districts to see to their drains and outfalls in order that all may be kept in the most efficient state, so that they may freely drain according to the facilities obtained by the lowering of the waters in the public or district drains, and which is generally accomplished by artificial means, such as "windmills," "steam-pumps," and "syphons." In these districts the subsoil-drains are variously made, *i. e.*, with pipes, tiles, thorns, and turf. The forming of the subsoil-drains by pipes is now the most popular practice. Thorns are used very generally for that purpose in the marshes, where the silt or sand is near the surface. Pipes speedily land-up by the silty deposits, having no declivity for water to flush them. Turf (dried into "little bricks") is occasionally used in the Fens, where the clay is near the surface. If properly put in at the bottom of the drains they act exceedingly well, and are a cheap substitute for pipes.

In laying the subsoil-drains in these flat districts great care and good judgment are requisite. In the marshes the chief guide as to the depth of the drains is the depth and capacity or facility of drainage given by the main outfalls. If these can be kept tolerably clear of water the drains may be laid accordingly. In most farms in Lincolnshire marshes the depth seldom exceeds thirty inches, at which depth the drainage is very effective. If laid much lower

they do not act so well, the mouths of the drains being so frequently covered by the water in the ditch outfalls; and although thus covered, the subsoil-drains notwithstanding will act, and the water is seen to bubble up from the subsoils, but it is a slow process; better to be content with a shallower and quicker drainage.

In the Fen districts the great guide is the depth at which the clay is reached. In all Fen districts the turf or peat is underlaid by clay at various depths. In some parts it crops out upon the surfaces: in others it underlies many feet below. It is, however, generally found at from two to five feet below the surface, and thus constitutes the guide for subsoil drainage. In laying these drains it is necessary to cut through the turf or peat, and lay the pipes in the clay, just sufficiently deep to permit them to be well covered with clay, so that the peat does not find an entrance to clog up the pipe by its gradual but minute deposits. Within the past thirty years it was deemed impossible to subsoil-drain the Fens. Now it has become the popular course; hence the above notice. I just break off to say, that by this complete system of drainage, by plentifully claying the surface peat, by artificial and other manures, and by judicious culture and cropping, these fens are becoming the most productive districts in the kingdom. There is considerable difficulty in these flat districts to ascertain the precise spot where a drain is stopped, so that it may be taken up, the pipes cleared and relaid. It is not so in the upland country. If a subsoil drain is laid along an incline, however slight it may be, and becomes stopped up, the spot is soon indicated by the water finding its way to the surface at that very place. The farmer has only to unbarre the drain, and rectify the hindrance. It is to these defects that I particularly desire to call attention at this season. Winter, or rather a wet season, is the time to disclose these hindrances, and it is the best time to remedy them. The farmer must use his best judgment as to the extent he will go in repairing these defects; but, generally speaking, if one portion of a drain gets out of order, it is soon followed by the remaining. It is not my intention to enter upon the subject of subsoil drainage generally, but a few concise remarks may not be out of place. It is a subject of congratulation for the whole kingdom that such a large breadth of it has been subsoil-drained. The produce thus increased has been very great, and is still increasing. It changes the very nature and condition of the soil, and no soils are so much benefited by it as those of the most tenacious and stiff character. To cause heavy strong clays to produce abundant crops of turnips and other roots, to be fed off without damaging the surface soil, is a surprising achievement. It is worth draining for, if ever so expensive. Strong loams are wonderfully improved by it; indeed, all soils of any consistency of subsoil are greatly benefited by it. There are very many soils that might be subsoil-drained at very small cost. I have myself effectually subsoil-drained a seven-acre field for about 3s. per acre. It is an oblong field surrounded by deep ditches; I merely laid thorn drains across it. In porous subsoils the drains may be laid at considerable distances, *i. e.*, from twenty-five to forty yards apart. In stiff loams the distances should be according to the tenacity of the subsoil; but from ten to twenty-five yards apart would supply an effective drainage. In strong adhesive clays it is not absolutely requisite to lay them so near to each other as is generally done. These frequent drains

make the drainage so expensive that many needy farmers forego the advantage of subsoil drainage altogether; whereas, if it could be shown that at a moderate cost it may ultimately be efficient, such drainage would be adopted. For these heaviest and stiffest of all clays I would, by all means, use the mole plough at great depth, and if it deposits the pipes as it proceeds by far the better. My reason for preferring the mole plough is this: In passing along at considerable depth it is surprising to see the breadth of surface disturbed by the movement. I have noticed the stirring of the soil to extend full six feet on either side the coulter, by which means pores, or *erivies*, are opened, so that the surface-water can find way to the subsoil-drain below. The summer's droughts and winter's frosts will gradually cause the further extension of these minute openings, so that ultimately, I believe, a good subsoil drainage might be accomplished, on the heaviest clays, at much wider intervals of drains than as now laid. To realize this, some patience is required. It is the work of time to complete this somewhat adventurous system; but it is worth the trial, and

would save much outlay. The main materials for subsoil drainage have about become settled—i. e., tiles, pipes, and thorns. Thorns may be chiefly and effectually used in all open and porous subsoils, and in the strong clays. In the former they will act well for many years, and must then be renewed; whereas, if pipes were used, they would soon be filled up by the deposit from these porous soils. In the clays both are effective. If the thorns decay in the subsoil, the orifice, or drain, will continue open for a long period. I have a thorn drain, laid in rather strong loam above thirty years since; and it is yet open, and utters much water. Of course the thorns have long ago rotted, but the clayey particles do not close. For all strong loams and clays *pipes*, not *pencil-cases*, are most to be recommended. These, if nicely and carefully put in, will almost last for ever. Tiles laid upon slate bottoms make the largest drains, and don't readily get displaced; but they have become superseded by pipes. Stones are yet used upon some farms, and answer pretty well, if they are to be found upon it. Sod drains, for grass lands, do very well for short periods.

THE MANUFACTURE OF BEETROOT SUGAR IN IRELAND.

Amongst the various measures proposed for the promotion of the prosperity of Ireland, is one for the establishment in that country of the manufacture of beetroot sugar; and probably if that object could be accomplished, and the manufacture carried on with spirit and perseverance, it would prove very beneficial and lucrative. Some letters have appeared on the subject from persons who profess to have had some connection with a company established a few years since at Mountmelick, in Queen's County, Ireland. These writers ascribe different and opposite causes for the failure of that promising undertaking; but from what we know *certainly* of the affair, we have no hesitation in asserting that they are misinformed, and that neither the "secretary" nor the "agent of the company" knows the true history of that abortive attempt.

The commencement of the beet sugar manufacture, as above-stated, originated in a course of four or five papers, read before the Royal Dublin Society in 1850, which attracted a good deal of attention and discussion. This eventuated in the formation of a company, and extensive premises were taken at Mountmelick. A machinist, well acquainted with the manufacture of sugar, both in the West Indies from the cane, and on the European Continent from beetroot, was engaged to furnish the necessary apparatus; and as soon as this was supposed to be in working order it was set to work. It was then found that second-hand materials had been employed, and that nearly the whole had to be replaced at the expense of several thousand pounds, with a necessary delay of several months. This was the first mishap—the reduction of the capital below what was required. Then a difficulty arose with regard to the supply of beetroot. The plan adopted was, to contract with the farmers for its cultivation, at 15s. per ton, the company furnishing the seed *gratis*, in order to ensure its purity. But when the root was matured, the growers refused to abide by their contract, and demanded from 20s. to 25s. per ton, coupling the demand with the threats of summary vengeance if their demands were not complied with. The affair, however, was, after some delay, compromised, and the manufactory got to work; but from that time no profit ever accrued to the shareholders. The chief manager of the works was a Frenchman from Valenciennes, and excellent sugar was

produced, all of which was sent to be sold in Dublin by auction. Still no returns were made to the directors of the company, who, we ought to state, all resided in London, the then manager of the British Bank being also Chairman and Managing Director of the "Royal Beet Sugar Company." Upon the explosion of the affairs of the British Bank those of the company came also to a stand, so far as any prospect of success was concerned. But the conductor of the works kept on with what capital was left, and ultimately the new managing director, a most respectable City solicitor, went over with the determination of having a settlement. On applying for admission at the works, the door was slammed in his face, with a positive refusal to allow him to see either the accounts or the factory, until the police were called in to storm the doors. Upon looking over the accounts the director dismissed the manager and shut up the works, which were soon after disposed of by auction; and as there were no persons on the spot requiring such machinery, the whole fetched little more than old iron price; and so ended the beet sugar manufacture in Ireland.

We could say much more respecting this; but "let bygones be bygones." Our present business is rather to vindicate the manufacture from the charge of necessary unprofitableness brought against it, and to show that the Mountmelick Sugar Factory should have been profitable, and the manufacture fully established in Ireland as a profitable institution of that unhappy country. To prove this proposition we shall now adduce a few facts that appear not to be generally known.

In 1851 an inquiry was instituted, by order of the Chief Commissioner of Public Works in Ireland, into the composition and cultivation of the sugar beet in Ireland, and its application to the manufacture of sugar. Sir Robert Kane, the director of the Museum of Irish Industry, assisted by Dr. W. R. Sullivan and Alphonse Gages, the chemical officers of the Museum, was appointed to conduct the inquiry. The Report, consisting of 93 pages, was laid before both Houses of Parliament by command of Her Majesty, and this is one of the most clear, impartial, and satisfactory documents ever issued on such a subject. Not only were analyses made of 125 specimens of the sugar-beet, 119 of which were of Irish growth, but experiments were made by a small apparatus, but

sufficiently large to produce 1 cwt. of sugar, to test the saccharine properties of the Irish beetroot on a practical scale. With respect to the analyses, the 119 specimens of root were obtained from as many different localities, and the result was that the amount of saccharine matter contained in them varied from 2.699 to 14.551 per cent., the majority ranging from 5 to 12 per cent. It must be remarked that the smaller the root, the larger the proportion of saccharine matter; and this is so well understood on the Continent, that the manufacturers who grow their own roots plant them at eight or ten inches only asunder, by which means they become dwarfed. We select a few specimens, to show the effect of size in the root upon the secretion of saccharine:—

Weight of bulb.			Per cent. of sugar.	Weight of bulb.			Per cent. of sugar.
lb.	oz.			lb.	oz.		
1. ... 0	12	.....	11.809	7. ... 1	11½	.....	11.226
2. ... 1	0½	.....	11.926	8. ... 1	15½	.....	12.120
3. ... 1	0½	.....	14.551	9. ... 6	11½	.....	7.453
4. ... 1	1	.....	13.507	10. ... 8	14½	.....	8.655
5. ... 1	2½	.....	11.272	11. ... 9	0	.....	2.699
6. ... 1	2½	.....	18.867	12. ... 9	7½	.....	3.523

The average proportion therefore of saccharine in the Irish-grown beetroot is fully equal to that on the Continent under the same latitude; for it has been demonstrated that the higher the latitude the larger the proportion of sugar. But the manufacture of sugar from beetroot has proved one of the most profitable institutions in France, and that without any protection whatever from the Government, and has been adopted by almost, if not quite, all the other Continental States with equal success, meeting the open competition with the growers of cane sugar without flinching. Where, then, is the obstacle in the way of its being successful also in Ireland? We have stated causes enough for the miserable failure of the attempt in 1851. Ample proof was given that sugar, quite equal to that produced in France or Belgium, could be made in Ireland, and an equal per-centage obtained.

With regard to the experiment of Dr. Sullivan, for proving the yield of sugar from Irish beetroot, the first attempt failed through causes totally independent of the quality of the root; but the second, which was operated upon half a ton of roots, yielded 6.51 per cent. of raw sugar and 1.63 of molasses; in all, 8.11 per cent. of saccharine matter, which is equal to the average of that obtained by the manufacturers on the Continent. This is expressly asserted by Sir Robert Kane, in his report to the Chief Commissioner, in the following words: "4th. That the quantity of sugar present in Irish-grown beet is in no way inferior to that usually found in the beetroots used in the sugar manufactories on the Continent, and that in some cases the per-centage of sugar yielded by beet approaches to that afforded by the sugar-cane as usually cultivated."

We would recommend Dr. Sullivan to publish another edition of his admirable and conclusive report, if the question is to be seriously entertained in Ireland. And we would also advise writers on the subject to read that report and make further inquiry before they endeavour, in their ignorance, to throw cold water on one more method of restoring prosperity to Ireland.

A letter appeared in the money article of the *Times* of Feb. 10 from Mr. Scheer, on the beetroot question, in which he states that the manufacture is only supported on the Continent by protective duties. So far as France is concerned, this is an error, the protective duty having been withdrawn some years ago, and the manufacture is now left to compete with the produce of the West Indies and other cane-sugar colonies. With regard to the climatic influences also referred to, that opinion is corrected by Sir R. Kane's report and the analyses it contains, specimens of which we have given above. We know not whether Mr. Scheer is acquainted *practically* with the beet-sugar manufacture, but certainly his opinion is quite at variance with the practice in France and with the experiment, though so far a failure, in Ireland.

AN OLD NORFOLK FARMER.

ESSEX AGRICULTURAL SOCIETY.

A meeting of the General Committee was held on Friday, the 14th Feb., at the Shire-hall, Chelmsford. Present: Sir Charles Canliffe Smith, Bart. (president), in the chair; Messrs. John Cardinal (vice-president), J. Oxley Parker, G. D. Badham, John Clayden, D. Sewall, Francis Whitlock, Wm. Thompson, junr., O. Copland, Peter Portway, Joseph Smith, junr., Charles Page Wood, W. Belcher, D. Christy, Edward Catchpool, Jas. A. Piggot, Thomas Mashiter, Charles Sturgeon, and Jas. Christy.

The meeting was convened for the purpose of revising the bye-laws and arranging the prize-list for the next show, which is to be held at Chelmsford, from whence the society started in the year 1858, having since visited most of the principal towns in the county.

Amongst the correspondence read by Mr. Emson, the secretary, was a letter from Sir T. Barrett-Lennard, Bart., offering to give a prize of £5 for the best yearling by Mainstone at the forthcoming meeting. Mainstone took the society's prize of £15 at the Halstead meeting in 1862, likewise the All-England Prize of £25 at the Brentwood show in 1865. The prize was

accepted with thanks; entries to be subject to the same regulations as for the society's prizes.

The subject of extending the show to two days was again opened, having been abandoned in the previous year on account of the cattle-plague; it was now felt that the experiment might be safely and advantageously made. It was moved by Mr. Thomas Mashiter, and seconded by Mr. John Clayden, that the show be extended to two days, and that it be held on the 25th and 26th of June, which was carried unanimously.

The sum of £700 was voted for prizes.

A discussion followed upon the desirability of having a public luncheon on the second day for the sale of stock entered for the show. It was ultimately negatived by 10 to 6.

The secretary was instructed to provide 400 feet more shedding for the next show.

The following were elected members of the society: Mr. William Potter, How-bridge Hall, Witham; Rev. Francis Merton Shepherd, Margaret Roding; Mr. Walter Jeffries, Langenhoe; Mr. William Keer, Heybridge; Mr. Edwin May, Maldon.

HORSEFLESH AS FOOD FOR THE PEOPLE.

Many years since there was a feeder to a kennel of fox-hounds, who was wont to declare that he "didn't waste his money in wittles." He carefully reserved his wages for the purchase of such luxuries, if not absolute necessities, as beer and tobacco; while he breakfasted from the broth, and dined of the bouilli, or on a steak from the flesh which it was his duty to prepare for the pack. If his master laughed at these eccentricities, Lady Harriet, on the contrary, thought it scarcely creditable to keep such a disgusting fellow about the establishment. But, after all, Jack was merely in advance of his times. Had he lived to set the example in these days, he would have been presented with a testimonial by the parish, and, most probably, have been invited to come up and dine with the savans at the Langham Hotel. So strange are the freaks of fashion. But a few months since, had a man been told that he had been eating horse-meat *sauces* he would have thought he was poisoned; and now he pronounces a horse's tongue to be as good as that of an ox, and resolutely seasons everything he tastes with the same forbidden fruit.

This matter of seasoning, as we take it, was the chief charm of the Langham dinner. As the epicure said of the sauce, that he could have relished his own father had he only been served up with it, so in the hands of a skilful cook a made-dish may be made of almost anything. The flap of a saddle or the top of a boot would serve the artist's purpose almost as well for a foundation as the fore-quarter of a four-year-old, or the leg of a brongham horse. Soups, stews, and so forth are proverbially manufactured from all sorts of stock; and, as one of the guests well puts it, the round dressed simply "was the test-dish of the evening, and showed what horse-flesh really was. It is like beef—not so succulent and not so palatable—but with a rather more gamey flavour, and perhaps more tender and digestible." Indeed, the more elaborate experiments appear to have been by no means so successful. Thus "the clear soup and thick soup, both very well made, were neither equal in flavour to the soup furnished at any well-appointed place of entertainment. The fillet and loin, and a stew, were all tolerably good, reminding British consumers strongly of the Palais Royal, and the beef served there to innocent foreigners." Then "there was a collared head which was very good, and a dish called 'boiled withers,' which looked outside like glue, and tasted like the essence of fag-ends of innumerable shoulders of mutton set in isinglass. The human race will, we guess, dispense henceforth with boiled withers." Again, horse-foot jelly is nothing like so nice as calf's-foot jelly, and so on, the "gamey" beef being about the best thing in the Bill.

At first all this sounds very like a plaything or mere whim, just as the mighty hunter devilled the fox's head, and had it served up with the macaroni; or the new-married man was so fond of his wife, that he felt inclined to eat her. As a nation we are a horse-loving people. We raise him almost to the rank of a demi-god, and very literally throw our fortunes at his feet. On no other occasion do we go forth in such throngs of thousands and tens of thousands as when he is the hero of the day. He is our companion at home, the chief figure in our great processions abroad, and now we are about to emphasize our affection by devouring him. It is the story of the pet lamb told over again, but with still

more pathos. There was a time when the poet sung sentimentally:—

"'Tis easy to foresee thy fate,
Bayard, thou'lt go to feed the hounds."

But Bayard now will do nothing of the kind; for instead of the hounds, he will go to feed the family. Is there really a necessity for this? Mr. Bicknell, a lecturer at the Crystal Palace, declares there is such a need. He says that on a very low estimate, a sufficient number of sound horses are killed in England to afford animal food to sixty thousand people, who, as it is, seldom taste meat from one year's end to the other. He maintains, further, that the only important country in the civilized world where a prejudice still exists against horseflesh is in England. In 1856 the French Government legalised the use of horse-meat as food, and now there are twenty-five shops open for its sale. There are also fifteen other countries in which this flesh is recognised as "a wholesome and nourishing edible": Iceland (where it had always been received), Russia and Denmark (dating from 1807), Wurtemberg (1841), Bavaria (1842), Baden (1846), Hanover, Bohemia, Saxony, Austria, and Belgium (1847), Switzerland and Prussia (1858), Norway and Sweden (1855).

Surely it is time for breeders and graziers, to say nothing of our butchers, to look about them. The high price of meat, it is maintained with some showing, is reason enough to warrant any experiment of the kind; and if good "gamey" roast-beef can be obtained for twopence or threepence instead of tenpence or a shilling a-pound, this must be a blessing to the poor; that is to say, if the poor can only "stomach" it. But, unfortunately, as a rule there are none so dainty or conventionally nice in their eating as the humbler classes. There are many servants who cannot be induced to touch game, or venison; and the labourer and artisan, when in full work, will be content with nothing less than the prime joints. It is said that in certain of the rural districts the example of the feeder we have cited is occasionally followed, and that the cottagers contiguous to the kennels will take a cut from the flesh sent in for the hounds. For anything like a general introduction, however, we must look higher; and, in a word, it must be the fashion who will set the fashion. A man of cultivated tastes may be brought to eat snails, woodcocks with the trail in them, and his haunch of mutton after being kept until the very vulgar might condemn it as rotten. The owners of the thoroughbred colts and the grand-stepping phaeton horses must make a beginning, and kill their own horses, just as they do their own Southdowns or their fallow deer.

As we have said, the means for increasing the food of the people is a subject which will probably command much consideration during the present session; and even the new Foreign Market cannot as yet be quite taken for granted. On the very first day of Parliament opening, Mr. Milner Gibson made a stand, as he considers, no doubt, in defence of the consumers' interest, and in a few telling sentences that will furnish the text-words in many a warm discussion hereafter. He complained that this proposal "was quite opposed to the report of the committee which had inquired into the foreign cattle trade in 1866, and which strongly disapproved of the establishment of a separate market for

foreign cattle. Such an arrangement would be a serious restriction upon the foreign cattle trade. It would deprive them of the advantage to be gained from the influx of buyers to the regular market. It would diminish the importation of foreign cattle, and would increase the price of meat in the metropolis. These were the considerations which had led to the report to which he referred, and he trusted that if the bill were read a second time, it would be referred to a select committee for the purpose of inquiring into its bearing on the consumers." The committee was at once granted on the part of the Government, and it would be idle to attempt to disguise the fact that some very hostile evidence will be called. Putting, however, the home-breeder and grazier, for the moment, entirely out of the question, it must be ever borne in mind that the

great want of the consumer—of the Londoner especially—is more markets. Had we more open markets for the sale of meat, fish, and poultry, trade would soon adjust itself, and we should bear little of the monstrously high prices, or of the inconvenience to which a customer is subjected when he seeks to serve himself on fairer terms. Horseflesh, when all is said and done, is scarcely the food of an Englishman, who plumes himself alike on his beef and mutton, and his hunters and hacks, when kept to their proper places, and who, with good management and fairplay, should keep them there still. We are getting beyond the ambassas absumere menses of actual extremity, as we make a meal from the "easy arm-chair" of a clever cob; and it sounds somewhat funny for a man to set himself up as a judge of a horse with a napkin across his knees and a knife and fork in his hands.

THE BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

The usual meeting of the Council of this Society was held on Tuesday, the 28th of January, at Taunton, under the presidency of Sir J. T. B. Duckworth. There were also present Messrs. T. D. Acland, M.P., H. G. Andrews, R. G. Badcock, R. Brembridge, Colonel Brent, W. A. Bruce, C. Bush, R. H. Bush, T. Danger, John Daw, E. S. Drewe, Fras. W. Dymond, M. Farrant, H. Fookes, John Fry, C. Gordon, John Gray, Jonathan Gray, John D. Hancock, W. R. Hicks, John Hooper, T. Hussey, J. E. Knollys, Colonel Luttrell, H. St. John Maule, H. G. Moysey, Rev. T. Phillpotts, S. Pitman, G. S. Poole, W. Porter, W. R. Scott, Ph. D., J. W. Sillifant, J. C. Moore Stevens, W. Thompson, H. Williams, E. B. Wilyams, H. Spackman (official superintendent), and J. Goodwin (secretary and editor).

FALMOUTH MEETING, 1868.—It was resolved to celebrate the opening of the exhibition on Monday, June 1, by a public luncheon in the show-yard, in accordance with the practice inaugurated last year at Salisbury. A committee, comprising Mr. Acland, M.P., Mr. R. G. Badcock, Mr. Cotterell, Mr. Hicks, Mr. Knollys, Mr. Moysey, Rev. T. Phillpotts, Mr. Poole, Mr. P. P. Smith, Dr. Scott, and Mr. H. B. Wilyams was also appointed to confer (if thought desirable) with the Falmouth Local Committee, with a view to the promotion of the objects of the Society during the time of the annual meeting, by the reading of papers, the giving of lectures, and the holding of conversazioni. It was also ordered that invitations for tenders for the privilege of supplying refreshments in the show-yard should be at once issued. It was reported that the Falmouth Local Committee have very handsomely undertaken, at their own cost, to convey all machines, implements, live stock, poultry, and other articles to and from the Falmouth railway terminus to the show-yard free of cost to exhibitors.

On the motion of Mr. Gordon, a committee was appointed to consider the special conditions and general regulations under which stock and implements are exhibited, and to report whether any alterations are thought desirable for the year 1869.

A letter was read from the Hon. and Rev. S. Best, on behalf of the Southern Counties Association, established very much on the model of the Bath and West of England Society, but proposing to direct its efforts more particularly to the six southern counties—viz., Hampshire, Sussex, Berkshire, Oxfordshire, Surrey, and Kent. In this letter overtures of amalgamation between the Bath and West of England Society and the Southern Counties Association were made by Mr. Best on behalf of the latter Society, and a scheme or basis, on which it was thought by them that an amalgamation of the two might be carried out, was stated in detail. With reference to the overture contained in this letter a long and animated discussion arose: by some it was contended that the Society's area was already sufficiently extensive, and ought not to be in any way enlarged; but it was shown, by reference to the early records of the

Society, that at the annual meeting in 1779 it was resolved that the counties of Berks, Hants, Devon, and Cornwall should be included within the district of the Society's operations; and in December, 1790, a farther resolution was passed that on account of the established character of the Society, and the widely extended residence of its subscribers, the title of the Society should become altered from "The Bath Society for the encouragement of agriculture, &c." to "the Bath and West of England Society." Stress was also laid on the fact that the Society in 1856 affirmed the desirability of holding meetings not only in Somerset, Devon, Dorset, Hampshire, and Cornwall, but also in Wiltshire, Gloucestershire, Herefordshire, and South Wales. Eventually a committee was appointed to confer with a committee appointed by the Southern Counties Association; and the Secretary was directed to acknowledge with thanks the communication of the Hon. and Rev. S. Best, in regard to the proposed amalgamation, and to inform him that the Council thought it would be impracticable to effect such amalgamation on the basis proposed by him, but they had appointed a committee to confer with the committee appointed by the Southern Counties Association.

FINANCE.—The Finance Committee brought up the annual statement, ending Dec. 31st, 1867; and, incidental to a short discussion, Mr. Knollys took occasion to congratulate the Society on the fact that, notwithstanding the adverse influences with which for the last two years all agricultural societies had had to contend, the Bath and West of England had not only been able to continue its work without the interval of a single year, but it had kept up the interest and the number of its members, and at the present time it was more than £2,000 better off than it was after the meeting at Exeter.

COUNCIL MEETINGS.—It was resolved that for the present year only the Council Meetings held in the months of February, March, and April shall be held on the last Saturday in the month instead of the last Tuesday. The day of meeting in the other months will remain unchanged.

NEW MEMBERS.—The following new members were elected: The Hon. and Rev. S. Best, Abbots Ann Rectory, Andover; Rev. A. Thynne, Kilkhampton, Cornwall; Mr. H. Hancock, Old Bond-street, Bath.

THE ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.—The council has decided to elect twenty-six pensioners in June next, thus increasing the numbers to one hundred. These pensions are for life, and the council has been gradually funding up to the present amount. Ten orphan children will also be elected in June. Mr. Bailey Denton has presented the institution with a donation of £25, the amount of a prize he gained for an essay recently written by him.

THE LEVYING OF RATES; AND THE EXEMPTION OF MINES, WOODS, AND PLANTATIONS.

At the annual meeting of the Devon and Cornwall Chamber of Agriculture,

Mr. SOBEY, of Menheiniot, moved "That the levying of rates for local purposes being a fiscal necessity of the community in general, all property should contribute an equitable share. That the exemption of mines, woods, and plantations from assessment to local rates is especially unjust, the first erasing the obligation only recently by a mere technical point in the law, and the latter as representing large and improvable property. That this chamber, considering that a bill has been introduced into the House of Commons to assess mines, desires to express its opinion on the equity of the principle, but believes that the bill as now framed will be wholly inoperative for effecting the objects sought to be obtained." He said with regard to mines, woodlands, and plantations, the injustice of their omission was so palpably evident that very little was wanting on his part to induce the chamber to accept the resolution. It certainly did present a great anomaly to see one species of woodland rated and another not. Coppices, they were aware, was rated; but if it became a plantation of firs, it was exempted. That undoubtedly was a great anomaly, for he could see no reason why the other property should not be rated. Considerable difficulty was said to exist in obtaining a basis on which to assess the value, but he did not think the obstacle was anything more than imaginary. If they took a practical view, and based it on the agricultural value of the land, he thought that would be all that would be required (Hear, hear). With regard to mines, they affected Cornwall and no inconsiderable portion of Devon; and living in a parish where mining was mainly carried on, he became personally aware of the great burdens they inflicted on the ratepayers. Mines evade their natural obligation to contribute to the burdens by a technical quibble. Within a recent period, not more than thirty years ago, every mine producing metal and returning a profit or royalty to the lord was assessed, but since about 1836 by a mere technical point of law—making royalty pay in money instead of kind—they had evaded the obligation of contributing to the rates. He could not help thinking that it was something like a reproach on the country that the matter should have remained so long in that condition. But there was a desire on the part of some that a remedy should be provided, and there was a bill at present introduced in the House of Commons to effect that object. But from the way in which that bill appeared to be drawn, he thought it would be wholly inoperative. He held the bill in his hand, and the third clause ran thus: "Provided always that in calculating the annual rateable value of a mine there shall, in addition to the usual deductions and allowances, be made such farther deduction or allowance as will, so far as can be calculated on the exhaustion of the mineral, represent by accumulation its original fee simple and the value of the capital expended thereon." Anyone acquainted with the nature of mining would be aware that if that clause were to become law, and all those allowances were made, there would be nothing at all remaining to be assessed, and he believed it would open quite a flood-gate to litigation. The question of rating mines had been actively canvassed in Cornwall, and mine adventurers and agriculturists as ratepayers appeared to have agreed on the principle that royalties were matters that should be rated and assessed to the local burdens. But there seemed to be a difficulty in the way of passing the clauses, and it was surprising they could not get an Act of Parliament framed which should effect their purpose. When all parties were agreed that a thing should be done, there ought not to be an obstacle of that kind in the way of getting the principle clearly expressed in a bill and passed into law.

M. DINGLE seconded the motion. He said with respect to the principle of rating woods and plantations he did not think there could be a doubt, because they all knew that if a gentleman at the present time planted a field for preserving game,

or for any other fancy of his own, that field was immediately struck off the rate-book; therefore if he had power to do that he could plant a whole estate or parish, and consequently throw unjust burdens on the ratepayers. With regard to the rating of mines, that was a question which many present, perhaps, knew little about; but living in a mining district, as he did, they felt the severity of the pressure, which they considered unjust. He could point out parishes in the union where he resided in which the poor's-rate had been increased 100 per cent., and that increase had been entirely accounted for by the relief given to miners, to which the mines at present did not contribute one farthing. (Cries of "Shame"). That would also refer to the repair of the highways (Hear, hear). He happened to live in a parish in which they paid from £50 to £60 a mile for some parts of their road extra to what they otherwise would pay but for the mineral traffic of those mines, which escaped payment to the local rates. In the union in which he lived there were paid in lords' dues £10,000 annually, for which the lord did not adventure one shilling, and yet he was paid also for all damage which the miners did, and all damage to lands, and in many cases received a small rent whether they returned dues or not. Last year Mr. Percy Wyndham introduced a bill in which he attempted to assess the mines, and went on the principle that the mines should be assessed in the old way, upon the net value; but the miners in Cornwall objected to that, and they said, perhaps not without good ground, that mining was an exceptional interest, that it embraced principles which were more speculative and hazardous than any other industries, and consequently they asked to be assessed upon the net results of their produce, which was paid to the lord in the shape of dues; and the ratepayers accepted that as a fair compromise. He considered, too, these were fair terms; but he did not think the bill which Mr. Percy Wyndham had introduced would effect that object in any way whatever. He, however, hoped to see this long- vexed question shortly settled.

Mr. W. SNELL said the subject of rating woods, plantations, and mines had been discussed in public a great number of years, and he had never known one gentleman stand up to defend the present state of things, or to give a reason why their exemption from the local rates should continue. The law was such that not only were ancient woodlands free from local burdens, but if a landowner, from whim or caprice, chose to plant his most fertile field or farm, he had the power at once to take that off the rate-book, and if he did so the poor had still to be maintained, as well as the highways. Immediately that particular landowner got rid of his fair share of those burdens somebody else had to pay them, because the sum total must be made up. Some persons had said that they as farmers were making a great deal too much fuss about woods and plantations, because when they took their estates they knew what their rates would amount to, and there would always be a little margin for anything that might turn up extra. But, as practical men, they were aware there was no such margin left. Competition was so excessive that they were pretty much in the landlord's hands, and so far from leaving any margin, they bid up to the last shilling they could afford to give, and if they did not, they would not get the farm at all. He could point out ten instances that had occurred during the past few years in which gentlemen had converted fertile arable land into woods and plantations, and he believed in most instances it had been for the purpose of extending their game preserves. He did not say that a gentleman was not entitled to his amusements; but for a great landed proprietor to put ground to what some persons might think perhaps worse than a useless purpose, and then for the agriculturists to be expected to pay rates on that land, it was abominable (Hear, hear). They had been debating that matter a long time; it had got to gail very much, and it had almost become a wound. What possible reason was there why they should continue to pay rates for property in the occupation of other persons? He knew scores of

cases where woodland belonging to small proprietors had become fertile land, and was affording wholesome food for the community, but the moment any of that ground was fairly occupied and put to useful purpose the overseer levied his rates upon it. The time would come, and it was not very far off, when a new state of things would arise. A certain class of landowners were prepared for the alteration. Those were the far-seeing men, who had a sense of justice in their breasts (applause). The Earl of Mount Edgumbe and Mr. Kekewich, M.P., had spoken out on that question, and those gentlemen had said that justice demanded that these woodlands and plantations should be rated (applause). Among the large proprietors there were a great number who saw that justice demanded that each man should bear his own burdens. But there were a certain class of landowners who ranked among the selfish and foolish, and they wished to perpetuate and continue that injustice. Those short-sighted men did not come forward in public meetings—they dared not come forward and argue the question; but they used their influence quietly with the members of both Houses of Parliament, and the effect had been that the Government had not taken action in that matter. As ratepayers, they had been going on grumbling for a great many years, and the burden still remained; but if they wished to continue that exemption much longer, they would be obliged to come out in public to battle. And what would be their cry? He supposed they would have a banner, and on the escutcheon would be, "Exemption for the large proprietor for his woodlands and plantations, and no surrender." Although, that might be their cry, it was not one in which he would like to take part (Hear, hear). He hoped that, for the sake of the great landowners themselves, another session of Parliament would not pass away before they removed that stumbling-block. They had no feeling of prejudice against the large proprietors (Hear, hear)—all they desired was to be treated with fairness.

The motion was put to the meeting, and carried unanimously.

The CHAIRMAN said of course it was a question which largely affected him; but he would not hesitate to say that the non-rating of plantations, timber, and mines was indefensible, and if the question came before him he should express that opinion himself (applause). That determination had not been at all influenced, however, by anything Mr. Snell had said, but had been come to previously.

The subject of the county meeting at Exeter was then discussed, and on the motion of Mr. PRATT, seconded by Mr. B. SNELL, it was unanimously resolved, "That this chamber, while viewing with satisfaction the movement now going on at Exeter for the formation of a chamber of agriculture for that district, feels it necessary to maintain the Chamber at Plymouth in its integrity and independence for the South and West of Devon and East of Cornwall."

A vote of thanks to the chairman having been unanimously passed, the meeting separated. The first Thursday in March was appointed for the next meeting of the Chamber.

COUNTY FINANCIAL BOARDS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Your leading article of February 3rd begins, "There never perhaps was a period when practical and political agriculture were so directly associated as at present," and as those who call themselves the county party and farmers' friends are now in power, I venture to call the attention of M.P.'s representing agricultural constituencies to the expediency of establishing county financial boards, as suggested by the Guardians of the St. Austel Union (see *M.L.E.* of Feb. 3) to regulate the expenditure of their districts.

At present the expenditure of the county rate is entirely under the control of the magistrates, and although they, as a body, represent a large proportion of the landowners and ratepayers, still there are in every county a certain number of persons, such as gentlemen residing in the country for sporting purposes, clergy, and others, who, although but small contributors to the county rate, having been made magistrates, have a voice in the county expenditure.

It is far from agreeable to tenant-farmers to see gentlemen living as yearly tenants in houses at from £80 to £200 a-year,

with more influence in the expenditure of the rates than the ratepayers whose land they ride over.

Generally speaking, the county money is properly expended; but, in these days of progress, where the tenant-farmer is generally fairly educated and of more careful business habits than many of the magistrates, it would be only a measure of justice that Parliament should allow influential persons, such as the large ratepayers, to have a voice in the expenditure of the money contributed by them.

Then as to the payment of rates. Should not all rates be paid half by the owner of property, and half by the occupier? and where an entirely new rate is imposed (such as an education rate, which seems looming in the distance), should not such a fresh burden on property be paid entirely by the landlord during the time of the present lease or holding?

This division of payments might not make eventually much difference in the amount of rent; but it would lead to a better understanding between landlord and tenant, and particularly where annual holdings are the rule. Boards of guardians and of waywardens (chiefly composed of tenant-farmers) might be more inclined to make liberal payments for future advantage than they are at present.

Landlords might also find it to their interest to attend really to their duties as guardians and waywardens; for how often is a room at petty sessions seen full of magistrates, who are but too apt to avoid the more unpleasant duties which claim them as ex officio members of other boards!—I am, sir, your obedient servant,

Feb. 8, 1868.

(A Landlord in a Midland County.)

PLEURO-PNEUMONIA.

SIR,—What is to be done to guard against the inroads of pleuro-pneumonia? I will give you one answer taken from the practice of some of the first farmers in the world, those of French Flanders, who fatten cattle on a very large scale to consume the mangold refuse of their sugar works and distilleries. I will quote specially M. Fiévet of Maany—a prize farmer who yearly fattens nearly 500 cows, &c., in sheds containing 200 stalls.

All these animals have to be bought up in all directions when the mangold season begins. They are all subjected to inoculation. This course was first adopted in 1861. After that, when a noble array of airy sheds was erected, it was for awhile deemed superfluous, but, on larger experience, has been taken up again as much diminishing risks and losses, which now amount only to 1 or 2 per cent. In the year 1862-63, when 800 head were inoculated, five beasts had to be killed in consequence. In ten other cases the virus did not take, but left the animals exposed to the malady.

"The mode of inoculation employed at Maany, that of Dr. Willems, consists of cutting off with scissors the hair on part of the lower end of the tail, making there three or four incisions, and inserting in each a small quantity of virus. This virus is the liquid extracted from the lung (not too much decomposed) of an animal that has been killed under an attack of pleuro-pneumonia. At the end of about three weeks a series of symptoms are manifested. They consist, for the most part, of certain pustules on the incisions, which heal of their own accord. In other cases the extremity of the tail swells, and exhibits a sort of gangrene, which is arrested by cutting the tail above the wound. I counted (says M. Barral) only two cut tails out of the 162 inoculated animals, which were in the stalls at the time of my visit to Maany. In a very limited number of cases the inflammation extends to the upper part of the tail and to the flesh adjacent to the point of attachment. Mortification is then apparent, and the veterinary performs an operation for the removal of the flesh that is decomposed. The wounded parts are then washed with a jet of fresh water passing through an India-rubber tube. This produces excellent results, except in winter."

I gather from the Agricultural Tours of M. Gasparin, that this practice of inoculation is pursued on many others of the large farms in the North of France, where the fattening of cattle on a very large scale is connected with mangold culture, sugar works, and distilleries.

I am, yours, &c.,

P. H. FENEL.

ANOTHER BOARD OF AGRICULTURE.

At the dinner of the Royal and Central Bucks Agricultural Association last month, Mr. W. BROWN, of Tring, in proposing the establishment of a Chamber of Agriculture for Buckinghamshire, said: I remember the time when the farmers were led by a noble Marquis—the Marquis of Chandos—who was considered the pioneer in all agricultural matters; but whatever may be the cause, it is not so now, at all events in this matter. He remarked the time when sixty or seventy gentlemen of the county would meet them at their annual dinners, and nearly half a score of members of Parliament, and many of the landlords of the county; but he was sorry to say they were not backed up by them now as they used to be. It is true that the Royal and Central Bucks, as well as some other societies, are established in this county, and play the part for which they were originally intended; but in every case political matters, or matters bearing upon politics, are strictly excluded, and this may be urged as one of the reasons for establishing a Chamber of Agriculture. In the month of April last, the Central Farmers' Club, to which I have the honour to belong, had this matter brought prominently before them by Mr. Nockolds, of Bishop Stortford, and I will mention some of the information he laid before us. First, he inquired whether there was any precedent for such a society, and it appeared that in 1793, through the influence of Sir John Sinclair, a charter was granted, and in conformity with its stipulation the Board was called "The Board or Society for the Encouragement of Agriculture and Internal Improvement." It was composed of all the principal Ministers of State, the Archbishops, the Commander-in-Chief, and a working staff of noblemen and commoners, with Arthur Young as secretary. It is chiefly to the exertions of this indefatigable man that we are indebted for the valuable reports of the farming of the various counties at that time; and I can state that a noble lord, known to most of you as a patron of the chase and as an extensive landowner, often makes reference to these reports, when any new idea is started, or comparison made with the farming of the present day. He might say upon this subject that he received yesterday the annual circular of Messrs. Gibbs, the seedsmen, and they mention therein that they had been appointed seedsmen to the Royal Agricultural Society, as well as to this Board of Agriculture, established in 1794. This Board continued to flourish until the year 1819, when it was put an end to by Lord Liverpool. Since that period, the Royal Agricultural, the Highland, and other societies have carried on the work contemplated by this Board, and the numerous county and local associations have also lent their aid; but, as I have before remarked, all matters of a political tendency were carefully avoided. Such being the case, I would ask what means the agriculturists possessed of stating their grievances and obtaining redress or remission of taxation, as compared with trade? Not only have Chambers of Commerce been established in the great towns of the United Kingdom, but they have a President at the Board of Trade, to whom they can go and state their objections, or make known their wants upon any matter affecting their interests. A worthy and excellent friend of mine (Mr. Rolfe, of Beaconsfield,) used to say in this room, "Agriculture was the master-scheme of the State;" but agriculture has not yet been so fortunate in this as in many other countries. Prussia has not only a Minister of Agriculture, but a Board also, and France has something very analogous. The American Government, democratic as it may be, has a commissioner to superintend this department. I am not suggesting the appointment of another Minister of State, or department for agriculture alone—there are other matters intimately connected therewith, performed now by the Board of Trade and Board of Health, which might be placed under the same authority. Mr. Brown proceeded to quote some of the remarks made by Mr. C. Sewell Read at the Farmers' Club, adding: In speaking of Mr. Read, I believe I express the sentiments of a majority of those present when I tender our thanks to the constituency of East Norfolk for having sent so useful a man to the House of Commons; and I may add a hope that they will return him to the new Parliament in an equally triumphant manner, and that too without expense. I think it would be equally agreeable to him if he found himself surrounded by a

few others of the same class. My impression is that the general establishment of Chambers of Agriculture in each county would lead either to the appointment of a Minister of Agriculture or to the formation of a separate department.

A CATTLE SALE IN WESTMORELAND.

During the winter months sales of stock are of frequent occurrence in this county, owing partly to persons changing their farms, and partly also to the expedient of annual sales adopted by many farmers when the fairs were closed during the cattle plague. In this thinly-populated district home-steads are widely separated from each other; but, nevertheless on the announcement of a cattle auction people come trooping, from all parts of the neighbourhood—not farmers only, nor the tagrag and bobtail of the district, though there are always plenty of them, but labourers, carpenters, and blacksmiths, who have no more to do with cattle sales than the conic sections. Why do these people come far from their homes, and sacrifice their day's wages? Join the throng, and you will see. Reaching the farmhouse after the sale has commenced, you perceive in the outer courtyard human forms sprawling on the ground in various forms of insensibility. Men are carrying into the barns apparently lifeless human bodies. Yonder a crowd is collected round a man who, it is thought, has really died from the effects of the "refreshment" administered before the commencement of the sale. These helpless beings, scattered on the grass, are the feeble and less fully-seasoned part of the throng, who have weakly succumbed to the mere "priming." Let us leave them and inspect the stronger section, who are yet on their legs. A loud hubbub directs to the ring, where the auctioneer is gesticulating with all his might, vainly endeavouring to direct attention to the merits of a heifer. The bidding is slack. "Send round the whisky," cries the man of the hammer. Round goes the raw fiery spirit, up goes the bidding, and down go more feeble-minded imbibers, who are forthwith hauled off to the outer yard or the barn, according to the severity of the seizure. The survivors fight, yell, and bid madly, the auctioneer raises his voice to stentorian pitch, more whisky is administered, and more, until at last the mob, frantic with drink, break into the ring, hustle the auctioneer, and stop all intelligible bidding. This is no fancy picture, but a description of an actual sale and a statement of facts of constant occurrence in this county. Seventy gallons of spirits and twenty-two barrels of ale are recorded by a local chronicler to have been consumed at one of these sales.—*Pall Mall Gazette*.

PRESENTATION TO MR. CHARLES BARNETT.—

At the Cambridgeshire Hunt dinner, when Lord Royston presided, about 120 of the county gentry were present. The event of the evening was the presentation of a piece of plate to Mr. C. Barnett, of Stratton Park, who had been master of the Cambridgeshire hounds for thirty-eight years, but has now retired. Lord Royston, in giving the health of the Prince of Wales, said his Royal Highness had subscribed to Mr. Barnett's testimonial; an announcement which was received with loud cheers. Lord Royston, in responding to the health of his father as Lord-Lieutenant, remarked that the Earl of Hardwicke was very fond of fox-hunting, and the best guarantee that a man loved the sport was when one found foxes in his covers. In presenting the silver salver, the Chairman dwelt upon the affection which the hunting gentlemen of the county felt towards the ex-master of the hounds. In Cambridgeshire, owing to there being so many small landowners, the master of hounds had greater difficulties to contend with than in localities where large landowners prevailed; but Mr. Barnett had tidied over them all. Mr. Barnett, in reply, thanked the company for the handsome present, and for allowing Mrs. Barnett to select the shape the testimonial should take. He had always taken a deep interest in the sport of foxhunting, and tried to carry out the conventional rules of the sport; a remark that was received with loud cheers. He concluded by complimenting the new master of the hounds, Mr. C. G. Newton, upon the way he had entered upon his duties.

CALENDAR OF AGRICULTURE.

The dry weather of this month permits the sowing of spring wheat, oats, peas, and beans, and barley in the end of the month in favourable seasons. Early peas and rape may also be sown as early as the state of land and climate will allow, and no time must be lost in making the first sowing of spring vetches, in order to procure an early succession of green food to the crop of winter vetches from May into June. The spring crop should be sown in February, when land and weather permit, and if not then as early in March as possible, and a second sowing in the extreme end of the month. Good lands are required for leys and stubbles, with an ample harrowing and a heavy rolling before the plants are grown to be smashed by the roll. The crops of vetches claim much attention as a feeding and soiling food, and must be thickly sown in three to four bushels on an acre, with a small mixture of barley or oats, which vary the food and sustain the recumbent vetch to preserve the bottom foliage.

Sow flax-seed on land of medium fertility, but well cleaned and manured. Sow lucerne on rich lands from dung and deep-ploughing, in 12 to 20lbs. to an acre: harrow the ground into a fine tilth, and roll it heavily. This plant yields a rich green food, is a convenience to the homestead during the early growth of young leaves and tender stems, and produces several cuttings for soiling cattle and horses in the yards. The later growths towards maturity are coarse in ligneous stems and discoloured leaves, and prevents the use of the plant in a mixed crop for hay, which is far exceeded by red clover for that purpose. The use is confined to a choice piece of ground convenient to the homestead, for the purpose of an early green food, where it requires a more than ordinary preparation of the ground, and an extra expense in subsequent top-dressings.

Sow carrots and parsnip on clean and rich lands, without the present application of dung, which encourages the growth of fibres and tops to the neglect of the fleshy root; drill at 18 inches distance on the flat ground with seeds steeped in lees of urine, or in a solution of nitrate of potash, six to one, and dried with hot lime. Sow sainfoin at 1½ cwt. an acre, and dress the young plants with gypsum. Sow artificial manures as top-dressings on young wheats, barleys, and clovers: soot and salt, malt-combs, rape-dust, nitrate of soda, pigeons' dung, and gypsum. Sow cabbage seed for sum-

mer plants, and graze light stock on the watered meadows. Lay composts on grass lands at the last period of the season; brush-harrow, roll, and finish the process; spread mole-hills and set traps; shut up fields intended for hay. The planting of forest-trees and of young hedges must cease when the dry weather sets in, and also the cutting of underwoods. Plant hops on dry land, deeply wrought and richly manured, make the pits afterwards, hills 6 feet distant each way, which best admits the scarifier; fill into the pits a quantity of well-rotted dung; place a set of the plant in each corner of the four sides, and cover lightly with earth, leaving the upper ends of the sets just in the light of day.

Begin to cross-plough the lands intended for green crop fallows, in the end of the month; in wet weather thrash grains and cart dung from the cattle-yards to the heaps in the fields.

In some, or rather in many situations, this month will be very busy with the ewes dropping lamb. Feed the animals amply with succulent food, as swedes, beetroot, and cabbages, which must have been stored for that most important purpose. Shelter is in many cases as necessary as the food itself, in an enclosed field with high fences, and a shed divided into apartments for special purposes, the floors littered very frequently with chaff and short straws for the sake of warmth. Remove the ewes and lambs regularly, as the latter get strong, from the lambing paddock to the pasture fields that are well secured by gates and fences, and to watered meadows.

The fattening and killing of hogs for bacon must now cease, and all young pigs will go on as summer stores, and for early fattening next winter. The fattening bullocks now foremost in condition must be sold or pushed forward by superior feeding; the inferior-conditioned animals will go to grazing, and come in as grass-fed.

Set hens on eggs for hatching, and exchange eggs with any neighbouring flock of an equal or superior quality. Feed all the animals largely with light grains and mashed potatoes steamed and mixed with meals of oats, barley, or peas. Keep the houses dry, clean, and warm, and provide a clear spring water, in a rill if possible. For sale and domestic consumption the animals of poultry are deserving of more attention than has been yet bestowed.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

This is the month of business, and every favourable moment must be seized, because the varied character of the weather is not only likely to perplex, but it frequently happens that drought sets in for the spring about the 21st, and then it will be

too late to hope for the success of many of the lighter seeds. Begin, therefore, early to dig, manure, and sow plots for the main crops of peas, beans, and all the summer vegetables, remembering that carrots require a pure and very sandy loam, without interspersed manure; that beet and pars-

nips do well in stronger lands, but like the dung to be placed lower in the ground.

The soil should be rich for cabbage, Brussels sprouts, broccolies, kales, and cauliflowers. The latter should go into rich ground, much of the manure lying in the bottom of the trenches under the roots. Guano-water must be an excellent manure for them.

Transplant and sow summer-hearting cabbages; sow a little Dutch red cabbage-seed and green-cured Savoy for Michaelmas.

Sow the best French lettuce seeds round spinach, and repeat this in small quantity every three weeks henceforth; in the meanwhile the winter prickly spinach will continue to yield freely for some months, if the weather prove showery.

Onions: The true Spanish for large bulbs, and the Strasburg for more common kitchen use, should go in early; the ground ought to be deep and rich. London leeks are sown to be transplanted.

To produce good radishes the ground ought to be light and rich, with moisture and warmth sufficient to push them on rapidly. For these reasons a frame and lights are always advantageous. A sprinkling of Dutch turnip, a little cellery for succession, small salading, nasturtiums for pickle, basil parsley, and potherbs—namely, fennel, dill, borage, burnet, sorrel—are to be sown during the month.

Plant thyme, sage, marjoram, lavender, rosemary, and rue.

Get in early potatoes: none surpass the ash-leaved kidney. The second early, as the champion, prolific, and others that ripen in August, should be ready, and avoiding manure, select or prepare sandy grounds—if peaty, the better. The cause of the potato disease is not yet known, but it seems to be less prevalent on poor and dryish soils than on lands that are rich and humid. On the latter soils the mildew is the more frequent, which may tend to produce some similar affection.

FRUIT DEPARTMENT.

Plant strawberry sets on beds in rows two feet apart, with the plants six inches asunder. The produce will last for several years, the first year being nothing, as every blossom ought to be removed. The best sorts are the "Keen" for a large and early crop, the old "Pine" for flavour, the "British Queen" for size and middle bearing, and "Knight's" "Elton" for a late, rather tart, but more beautiful fruit. Single rows in borders should be a foot away from the edging, and as far from any vegetable or shrub. The plants may be permitted to thicken by off-sets as much as they will, and not to fill the ground with runners, unless with the object of obtaining a new supply.

Begin to graft apples and pears; cherries and plums do better by budding in summer.

If any trees or shrubs be planted it must be finished by the end of the month. "Puddle" in the roots, which must be thickly covered over the surface with mulch, for if drought sets in the trees will be fatally checked.

Lightly fork the soil between rows of currants, gooseberries, and raspberries, then cover the ground with a leafy compost manure. Do the same by and round rhubarb plants.

FLOWER GARDEN AND SHRUBBERY.

Sow hardy annuals after the middle of the month, the more tender plants in pans under glass, where they are safe, and can be thinned out and brought into fit condition for final planting. For early sowing use dianthus or pink, with the Indian variety, larkspur, scabious, and mignonette. Herbaceous plants may now be set or divided, and put into new situations.

KITCHEN GARDEN.

Young scarlet variegated, and other geraniums, for bedding out, should be potted singly, in loam, sand, and leafy mould, then placed in frames to harden.

Prune roses to well placed low beds, mulch round the roots with rich compost, and fork it in. The moss, "maiden's blush," and other good and fragrant old varieties can frequently be made standards on their own foundation with good figure.

Cut box, plant edgings, turn over gravels, or put down fresh; sweep lawns, and keep every place in neat order. Give air freely to any green-house plants, and pot those that require more room, remove all decaying leaves, and give proper supplies of water.

Carry to the pit that is bricked and cemented all litter and vegetable refuse, straws, and the droppings of animals, to be baled over frequently with liquid matters and soap-suds from the house, always remembering that manure is the foundation of every attempt to cultivate the ground.

RENOVATING GRASS LANDS.

An Allegany correspondent of the *Rural New Yorker* furnishes an interesting statement of his experiments in renovating meadows where dairying is the principal business, and where it is desirable to keep the land most of the time in grass. Meadows there become greatly diminished in their grass in a few years. He tried harrowing the surface, top-dressing with manure, re-seeding, plastering, applying ashes, &c., with little effect. He harrowed one-half of an eight-year meadow after manuring it in spring, and had an increase of twenty-five pounds of hay per acre. Sheep manure, applied in full on a new meadow, gave an increase of a hundred pounds per acre. Discarding these modes, he next turned the sod with a good plough, and re-seeded to clover and timothy after the first crop; what this crop was he does not state. He has thus renovated seventy acres, rolling in the seed. An old twelve-acre meadow yielded but six loads; after renovating as described, the first crop was twenty-six loads, the next twenty-four. In four years he ploughed again, seeded with four and a half loads of manure per acre, and harvested fifty bushels of oats per acre, and the next year forty-one loads of hay from the twelve-acre lot.

It will be seen that his manuring was not heavy. The application made in spring in a former experiment resulted as we should expect, especially if thinly and unevenly applied at that season of the year. Autumn manuring, uniformly and evenly made, is much more efficient. But it must be admitted that inverting the sod on dry uplands is the most perfect way of restoring heavy crops, a full amount of grass seed being used. Manure must be applied freely, if only a single year is taken for this renewal; but if two more years can be added, so as to turn in a heavy crop of clover in a short rotation, there is no question that a great improvement would be made. It must not be forgotten that one great objection to ploughing and re-seeding grass fields is owing to a sparing use of grass seed, and an imperfect preparation of the surface for it. Sow

thickly, say a peck or more per acre, on a smooth, mellow, finely top-dressed surface, and a dense, heavy growth of grass will be the result, much better in quality than that afforded by large, coarse, thinly-scattered stems. Some successful graziers inform us that they have succeeded in restoring meadows after

cutting four or five crops of grass from them, by pasturing them with cattle for two or three years, taking care never to graze them short, but allowing a growth of grass at least eight or ten inches high, and especially in autumn and on the approach of winter.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, Feb. 5.*—Present, Lord Bernal in the chair; Lord Chesham, Lord Tredegar, Lord Walsingham, the Right Hon. Sir John Trollope, Bart., M.P., Sir A. K. Macdonald, Bart., Mr. Baldwin, Mr. Barnett, Mr. Bramston, Mr. Cantrell, Colonel Challoner, Mr. Davies, Mr. Brandreth Gibbs, Mr. Holland, M.P., Mr. Hoakyns, Mr. Hornsby, Mr. Milward, Mr. Pain, Mr. Randall, Mr. Rigden, Mr. Sanday, Mr. Shuttleworth, Mr. Stone, Mr. Thompson, Mr. Torr, Mr. Webb, Mr. Wells, Major Wilson, Mr. Jacob Wilson, Mr. Frere, Professor Simonds, and Dr. Voelcker.

The following new Members were elected:—

Barker, Thomas, Bramall Grange, Stockport, Cheshire.
Bateman, John, Croxton Hamner, Whitechurch, Salop.
Burchall, Samuel, Catton, Barton-on-Trent.
Freer, Charles Thomas, The Coplow, Billesdon, Leicester.
Gardner, William, Bekesbourne, Canterbury.
Gilbert, John, Perry Bar, Birmingham.
Herring, Francis, Brasted, Sevenoaks, Kent.
Hillyard, Thomas Blackbourne T., Flintham Hall, Newark.
Hunt, Rowland, Kibworth Hall, Leicester.
Jordan, John Staveley, Elmswell, Driffield.
Kirkby, David Edward, Llanfendigaid, Towy, Merionethshire.
Knight, Gregory, Glen Parva Manor, Leicester.
Liddell, The Hon. Henry G., M.P., Ravensworth Castle, Durham.
Macdonald, Duncan George Forbes, 4, Spring Gardens, London.
Marx, Captain F. A., Holly Hill, Southampton.
Mowbray, G. T., Grangewood Ho., Oversale, Ashby-de-la-Zouch.
Nalder, Thomas, Challow Works, Wantage.
Nash, John, The Rectory, Langley, Slough.
Salt, Wm. Henry, Kirby Frith, near Leicester.
Taylor, Thomas, Hopton, Wirksworth, Derby.
Wakefield, William, Catton, Burton-on-Trent.
Walker, Edward, Brynhyfryd, Dolgelly, Merionethshire.
Winters, George, Stratton, Biggleswade.
Wright, Herbert, Ipswich.

FINANCES.—Mr. Bramston presented the report, from which it appeared that the Secretary's receipts during the past two months had been examined by the committee and by Messrs. Quilter, Ball, and Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on January 31st was £1,435 19s. 4d. The balance-sheet for the quarter ended December 31st, 1867, and the statement of subscriptions and arrears, were laid upon the table; the amount of arrears then due being £1,084. Two hundred and ninety-five members have given notice during the past year of their withdrawal from the Society. The country meeting account of Bury St. Edmund's was laid before the Council.

JOURNAL.—Mr. Thompson, chairman, reported that in Class XI. the judges award the prize of £10 to the essay, of which the writer was announced, on the motto-paper being opened, to be Mr. Joseph Harding, Marksbury, Bristol. The papers bearing the mottoes, "Ovium rodentia sociis," and "Agriculture is the immediate source, &c.," were commended.

DISCUSSIONS.—The Weekly Council days before Easter at which lectures and discussions may be given, are February 12, 19, and 26; March 11, 18, and 25. But as the want of interest in these discussions, evinced by the great paucity of attendance, led to the expression of some doubt by several members of Council whether it were desirable to continue these discussions, the Journal

Committee wish for further instructions from the Council on the subject, and especially whether the subject of Co-operative Associations as applied to Agriculture be one that meets their approval. This report was received.

IMPLEMENTS.—Colonel Challoner, chairman, reported that the committee had taken into consideration the resolution come to by the Council on the 4th December, 1867, viz.: That it be an instruction to the Implement Committee to consider the subject of the prize sheets, and the arrangements for the new course of implement trials, and that the exhibitors of machinery be invited to send a deputation to meet and confer with the committee upon any changes that may be desirable. A large deputation of implement manufacturers had attended the meeting of the committee, and submitted a series of resolutions passed at a meeting of agricultural implement manufacturers on the 3rd inst., and recommending a further subdivision in the classes of implements for trial, so that a longer interval should intervene; the cessation of the offer of prizes for certain machines; the award of three classes of medals in lieu of money prizes; the appointment of a paid official to carry out the mechanical details of the trial-yard; the appointment of juries, composed of mechanical engineers and practical farmers, in lieu of three judges; that the judges should express in their report the value allotted to each point of excellence by numerals; that the prize-list should be published at least a year prior to the meeting; that the trials should be of longer duration, and be concluded one clear day previous to the show; that a report of the trials be sold with its catalogue; that the trials at Leicester commence one clear week before the show; that the steam-plough trials take place after harvest; and that a large number of manufacturers have seats in the Council. The Implement Committee wish to receive the general instructions of the Council as to these resolutions, and recommend that they be referred back to this committee for consideration, and that, in the meantime, a printed copy of the same be sent to each Member of Council. The report to be made to the Monthly Council in March. This report was received and adopted. Mr. Thompson having moved that the resolutions now read, passed at a meeting of agricultural implement manufacturers on the 3rd February, 1868, be referred to the Implement Committee, to consider and report upon, and that they be empowered, before making their report, to revise the whole of the Society's existing arrangements for the trial of implements at the country meetings, the motion was seconded by Mr. Torr and carried.

LEICESTER MEETING.—Mr. Thompson, chairman, stated that the committee had heard letters read from the Town Clerk, reporting that the turnpike gates on the Welford and Lutterworth roads will be thrown open to the public free of toll during the Society's Show day. Authority had been given to the Secretary to advertise the Prize Sheets in accordance with the last decision of the Council on this subject. Mr. Sanday had been requested to make arrangements for the supply of the food required for the live stock during the Leicester Show. The Surveyor had been directed to prepare a plan and specifications for the proposed continuous shedding for

machinery in motion; the plans to be submitted to the Showyard Contract Committee. This report was received and adopted.

SHOWYARD CONTRACT.—Mr. Randell, chairman, said: The Surveyor reports that the whole of the Society's portable buildings and plant have been conveyed to Leicester, and deposited in the place assigned by the Local Committee there. The Council having determined to continue the contract with Mr. Penny for the further term of four years, subject to such changes of dates for giving him possession of the Show grounds as may be found necessary, and for payments to be made during the progress of the work, the Surveyor was directed to prepare an agreement embodying these changes, with others which were found desirable, and which agreement should be appended to the original contract. This agreement has been considered and approved, and your committee recommend its adoption by the Council. The committee recommend that stables upon the Yorkshire plan be substituted for the double horse boxes used at Bury St. Edmund's, but covered with canvas instead of boards. Application has been made to the Leicester Committee by the Royal Horticultural Society for land on which to hold their Show during the meeting of the Agricultural Society there; this would involve some change in the plan of the Showyard approved by the Council, but it appears so desirable in the interest of both Societies that their Shows should be held in immediate proximity to each other, that your committee recommend that the piece of land marked A be offered to the Horticultural Society, and, if accepted, the Showyard plan be altered accordingly. The Secretary was authorised to sign the agreement with the contractor on behalf of the Society.

VETERINARY.—Mr. Wells reported that Professor Simonds informs the committee that the Annual Report of the Royal Veterinary College has been delayed in consequence of Mr. Newdigate (who undertook its preparation on the part of the Governors of the College) having sustained a severe family affliction. The Report will be in the hands of the Council by the March meeting. The Secretary is requested to lay the details of Mr. Ernes' claim before the committee at its next meeting. This report was received and adopted.

AGRICULTURAL EDUCATION.—Mr. Holland, M.P.,

chairman, reported that the following gentlemen have consented to act as Examiners at the examinations to take place next April:

Mechanics—Mr. C. E. Amos.
Chemistry—Professor Liveing and Professor Voelcker.
Botany—Professor Bentley and Professor Oliver.
Geology—Professor Morris.
Veterinary Science—Professor Simonds and Professor Varnell.
Land Surveying—Mr. Field and Mr. Cadle.
Book-keeping—Messrs. Quilter and Ball.

The Examiners in the Science and Practice of Agriculture will be reported at the next meeting of Council. This report was adopted.

COUNTRY MEETING QUERIES.—Mr. Milward reported that the list of queries had been revised and ordered to be sent to the different towns in district B.

COMMITTEE OF SELECTION.—Mr. Thompson reported that the number of Members of Council representing different districts having been compared and considered, it was resolved that Mr. William John Edmonds, of Southrop, Lechlade, Gloucestershire, be recommended to fill the vacancy caused by the resignation of Mr. Lawrence, district G containing 555 members and being at present represented by only eight Members of Council.

Mr. Edmonds having been proposed by Mr. Thompson and seconded by Mr. Holland, M.P., was then unanimously elected a Member of Council.

Lord Berners having called attention to Rule 14 of the Stock Prize Sheet, moved that store or breeding stock shall not be excluded when shown as such at a Local Show, which was seconded by Lord Walsingham, and carried. The rule will now stand as follows: "No animal that has been exhibited as Fat Stock at any Show shall compete for the prizes of the Society."

The half-yearly audit of accounts to 31st December, 1867, took place on Thursday before the auditors, Messrs. Astbury and Sherborn, and the Society's professional accountants, Messrs. Quilter, Ball, and Co.

ROYAL AGRICULTURAL SOCIETY.—Mr. John Hudson, of Castleacre, has resigned his seat at the Council, in consequence of his somewhat advanced age.

NORTH RIDING CHAMBER OF AGRICULTURE.

A general county meeting of the members of this Chamber was held in the Corn Exchange, Malton, Mr. R. H. Bower in the chair. There was a numerous attendance.

Mr. R. KILBY, of Appleton Rosebuck, moved the following resolution, which was stated to have been unanimously adopted by all the branch-chambers which up to that time had considered the subject: "That in the event of any infection being spread in the home stock, by the importation of diseased foreign stock, three-fourths compensation should be allowed, and that the same should be paid out of the Consolidated Fund, and not out of any county or local rate."

Mr. CAYLEY, of Wydale, said that "fair and equitable" might mean anything. It should be more definite.

Mr. VERRITT, of Thirsk, seconded the motion. He said that if they only gave three-fourths, there was 25 per cent. upon concealment and consequent spread of the disease. If they gave an owner of stock amongst which disease had appeared full compensation, it would be a much greater inducement to him to destroy the diseased animals at once, than if they only gave him three-fourths.

Mr. CAYLEY suggested that the motion should be altered as follows: "That full compensation be given for all cattle slaughtered by order of the Privy Council." It appeared to

him that if cattle were imported for the benefit of the public, and disease appeared in consequence, the public ought to pay for it. If a single case of disease appeared, and it were unreported, it might spread over the kingdom in a few weeks. Therefore the cheapest policy was to give full compensation, as that would secure the "stamping out" of the disease at once.

The motion, after being altered as suggested by Mr. Cayley, was put and carried unanimously.

The following resolutions were on the paper for discussion:

Mr. J. H. Legard's amendment of the resolution as to the formation of financial boards, which has been adopted by the Ripon and Scarborough branches, but to which the Pickering and York branches have proposed an amendment as follows, viz.: Mr. Legard's resolution: "That, with the view of correcting an anomaly, this chamber considers that county financial boards ought to be established, which should possess a controlling power over the expenditure of all moneys raised for county purposes, and that this chamber is of opinion that such boards might be composed of members from each poor-law union, in addition to magistrates assembled at quarter sessions, and pledges itself to give its support to any measure which may be introduced into Parliament embodying these principles."

The amendment as passed by the Pickering and York branch Chambers: "That county financial boards ought to be established, which shall possess a controlling power over the county expenditure; and such boards should be composed of one representative from each board of guardians, to act with an equal number of magistrates."

The Thirsk branch have adopted an amendment in the following terms: "That, with a view of correcting an anomaly, this chamber considers that county financial boards ought to be established, which should possess a controlling power over the expenditure of all moneys for county purposes."

A similar resolution was also sent in by the Ryedale branch.

Mr. SOULBY (the secretary) read a letter from Sir W. Payne Gallwey, M.P., regretting his inability to be present at the meeting, and stating, in reference to the question of financial boards: "To appoint elected members to sit on the quarter sessions bench would be useless; but not so to constitute a permanent board half-composed of ratepayers. I send you a copy of Mr. Milner Gibson's bill. I, with the assistance of others, have been considering it for some time. Out of it I hope to make a bill which will be satisfactory to moderate men. I think that one of the clauses, viz., the 46th, contains almost all that we need. We considered that the many and very voluminous clauses towards the end of the bill might be avoided by a general clause, most carefully worded, under good advice, which should transfer in financial matters, and in the conduct of financial matters, the rights and responsibilities now exercised and incurred by the quarter sessions to the new financial board. . . . I have placed on the notice-book of the House my intention to ask leave to introduce a bill for the establishment of county financial boards."

The Secretary having read the clause referred to in the letter,

Mr. CATLEY also thought they had hardly information sufficient to justify them in coming to a resolution upon the subject that day. He believed that in Scotland these matters were managed by some sort of financial board, and in Ireland by grand juries, which, however, were differently constituted to those in England. They should have information on all these matters, before coming to a conclusion in reference to such an important change. At the same time, he might say that he had always maintained the principle that those who paid the money had a right to see how it was spent.

Mr. CRAIGIE said that, to the best of his recollection, the system in Scotland very nearly approximated to that in Ireland. The county expenditure was managed by Commissioners of Supply, appointed by the Lord-Lieutenant. The Commissioners were not necessarily magistrates.

Mr. FARSEYDE was in favour of waiting to see the result of Sir Wm. Gallwey's bill.

Captain COPPERTHWAITHE suggested that they should come to a resolution to the following effect: "That, while it is fully recognised that the representative system might be advantageously applied to the expenditure of the county rate, and Sir William Gallwey having signified his intention of introducing a bill having this principle in view, this chamber postpones the further consideration of this question until that bill is before it."

This resolution met with a general assent, and was put and carried.

In reference to the education of the labouring classes the paper contained the following resolutions:

THE RIFON RESOLUTION.—"That this meeting recognises the necessity of providing efficient means of education, where such do not already exist; that, where voluntary efforts are inadequate, and recourse to public funds is necessary, this meeting is strongly of opinion that a rate based on the present poor-law assessment would be partial and unjust in its operation, because an enormous amount of the wealth of this country is not liable to be rated, and would therefore bear no proportion of the expense of any scheme of education, founded on the present system of rating; that this meeting considers compulsory interference with the parents in the management of their children undesirable and unnecessary, at least in agricultural districts, and that any coercion would be deemed by them as repugnant to that liberty of thought and freedom of action which all Englishmen so much appreciate; that in the carrying out of any scheme which may be adopted, it is expedient that a local board of supervision be established, to co-

operate with any Government official who may be appointed in the management of the schools situated in the respective localities of such boards."

THE THIRSK RESOLUTION.—"This chamber, recognising the great importance of the question of education, desires to express its opinion against any undue haste in the decision of the question, but records also its opinion that any additional facilities required for the education of the labouring classes should be provided by an increased amount of State aid, and the application of local funds, together with such local rates as may be necessary, those local rates being in similar proportion to the aid granted by the State. And this chamber concurs in approving of the principle of the establishment of educational districts co-extensive with poor-law unions, with local boards of management composed of poor-law guardians, the present managers of schools, and other fit and proper persons, and of the enforcing of attendance by making educational certificates a condition of hiring and employment."

Mr. SMITH said that, as to the half-time system, it would not work, as the farmer must have the land the whole day or not at all. The resolution he had to move was: 1, That commodious and healthy schoolrooms, with efficient teachers, should be provided where necessary. 2, That Government grants be made for the erection of schoolrooms, and for the payment of teachers. 3, That a Board of Education be formed in every poor-law union, composed of all the guardians, with an additional elected member from every 5,000 of population in every poor-law parish. 4, That grants in aid still be made to all denominational schools, and all establishments for training teachers which now receive them, or hereafter make application for them. 5, That it is not necessary that teachers employed by the Board of Education should possess a certificate of ability from any training establishment, it being sufficient that the board consider him suitable and efficient. 6, That grants in aid be made only to those schools and to the amount recommended by the board. 7, That as of necessity such schools as are under the management of this Board cannot be sectarian in character, therefore grants must only be made on condition that the holy scriptures be read and taught therein. 8, To induce attendance at these schools, the charge for education must be as low as possible, the board having power to exempt from payment altogether those whom they consider unable to pay; and rewards for attendance may be given, as the board may direct. 9, That all children of paupers be educated free of charge, and the parents be compelled to send them, upon pain of forfeiting their weekly allowance.

Mr. FARSEYDE moved that the resolutions be received, and that, after consideration by the council, they be sent out to the branch chambers and laid before the Council of Education.

Capt. COPPERTHWAITHE seconded the motion, which was adopted.

SALE OF MR. WILLIAM LAWSON'S ESTATES.—This gentleman, who has become famous from his co-operative system with his labourers and his vegetable Christmas feasts, sold four of his estates in Cumberland by auction in the past month. Mr. Lawson thus reports on his own farming operations: The land and its cultivation (deducting all liabilities), including both the landlord's and tenant's property—for Mr. Lawson occupies his own farm—which were worth £25,367 14s. 5½d. on December 19, 1865, were worth only £23,928 14s. 0½d. on December 19, 1866. Besides a personal expenditure of £143 6s. 8½d., there had been a loss during the year of £1,295 13s. 8½d. and, "At a public meeting in Blennerhasset, on May 14, 1867, the following resolution was passed: 'That William Lawson has derived no income from his stated capital last year!'"

THE COUNTY FINANCE MOVEMENT.—On Tuesday, March 3rd, Mr. Wild will move to bring in a Bill for the Establishment of County Finance Boards; while Mr. Milner Gibson has some proposal of the same sort under consideration; and Mr. Clive, as it is said, has also threatened to move in the matter.

A MARK-LANE LIFEBOAT.—The members of the Corn Exchange, Mark-lane, have presented through Messrs. B. L. Judkin and H. K. Jackson, to the National Lifeboat Institution £500. In compliment to the subscribers, the institution has decided to name the Yarmouth large lifeboat "The Mark Lane."

AN AGRICULTURAL "DEPARTMENT."

"We shall have no real or permanent redress until there is a department of the Board of Trade specially devoted to Agriculture. We want some one about the Government who possesses the confidence of the agricultural interest, some one to advise and guide us in our difficulties, and help and support us in our disasters. At present we have nothing of that kind but what is conflicting and embarrassing." So said Mr. Sewell Read, in an address which is now going the rounds of the country; and it is very noticeable how soon the honourable member for East Norfolk has been enabled, from his own personal experience, to give point to his remark. We publish a correspondence that has just taken place between Mr. Read and Mr. Cave, on the part of the Government, touching the system upon which the corn averages are arrived at. The first thing that will strike one, in reading this, is the tone of the reply—a very nice illustration of official frigidity. Mr. Sewell Read, as member of the House, had in the outset called the attention of Parliament to the subject, when he was requested by Mr. Hunt, one of the Government, to bring the matter under the notice of Mr. Cave, to whose especial care the corn averages might be considered to be entrusted. Mr. Read acts upon this suggestion, with all that courtesy and modesty which have ever marked his conduct both in public and private; while he is answered in a month or so by a *Memorandum*, written in the third person, and emanating from it would be really difficult to say whom. The very authority of this precious document is "conflicting and embarrassing;" and had we not Mr. Ward Hunt's word to the contrary, it might have been reasonably assumed that Mr. Read had addressed himself to the wrong quarter. As it is, he is clearly troubling himself about a business of which he knows little or nothing, and every case he puts or argument he offers is very coolly and almost directly contradicted. According to Mr. Emerson Tennent, Mr. Cave, or some other gentleman at the Board of Trade, "there does not appear to be any evidence that the corn averages do not represent the average value actually realised for corn in the markets from which returns are obtained"—"The returns from which the official averages are computed *do* in the aggregate include the market prices of all qualities of corn which can fairly be said to have a market value"—"The case as suggested, of the same lot of corn being returned several times over, is *possible*, but it is *probable* that in practice corn is generally bought direct from the growers"—"It is difficult to say that selling grain by weight is a growing practice or not;" and so on. In fact, there is not a point which Mr. Read raises but that is corrected with a promptness and decision which would go to imply that he had either deliberately advanced it as an untruth, or on the scarcely less pardonable plea of being in utter ignorance of all he was talking about.

It is, indeed, hardly fair that gentlemen, who appear to be harassed enough already with the statistical department of the Board of Trade, should be bothered any further in this way; and Mr. Sewell Read has accordingly been so thoroughly set down, that, although he has presumed to write another letter, we might follow the fashion and drop him also. Most likely, as a purely agricultural member, he has been somewhat in search of agricultural grievances, or we should never have heard of such a complaint as this; for it it plain enough that the *Memorandum* has been penned with a feeling of something very

like indignant astonishment. Mr. Emerson Tennent, Mr. Cave, or the Board of Trade, may have never known of such unwarrantable interference with their duties in the whole course of their official lives. Nevertheless, Mr. Sewell Read has precedent for all he is doing; and in this business, as in all others he takes up, he is strictly representing the views of his own special constituents. He occupies at this time, beyond other such offices, the position of Chairman of the Farmers' Club; and during the last twelve years there has been no question so continually before the members of this body as that of the corn averages. In 1854 it came under consideration as the imperfect mode of taking the corn averages, when the following resolution was adopted, and on the next day handed to Mr. Cardwell, as the then President of the Board of Trade: "That, in the opinion of the members of this Club, the present mode of taking the corn averages is imperfect in its operation and injurious to the agriculture of this country. That returns should be made, by the grower, of all corn sold by him, verified by the signature of the buyer, such return to be taken by the Excise or Inland Revenue officers." In 1856 the question came on again, with this result: "That the present plan of taking the average price of corn is conducted in a manner so careless and inefficient as to imperatively demand some alteration." In 1858 it was once more taken up, when Mr. Owen Wallis, who gathered the general sense of the country in a paper he had prepared, stated "that the majority of persons interested in the matter were manifestly in favour of weight, which was in very many places entirely superseding measure." In 1864 the corn returns once more stood on the card for discussion, when past-chairmen of the Club, and other well-known agriculturists, expressed themselves in this way: Mr. Charles Howard, Biddenham, Bedford—"With regard to the returns of corn purchased in our market, I should hardly think one-quarter of it is so reported to the inspector; in fact, it is quite a farce, and so looked upon by all business men. Of course such a state of things cannot but be injurious to farmers. A better system should be at once enforced, or abolished altogether the present. There is a very great deal of corn consumed by the farmer, mostly the inferior qualities. I have this year, out of 465 quarters of barley, consumed nearly 220 of it; besides all tail wheat, and the peas and beans I grow. I know many farmers who sell nothing but their wheat and a few oats, consuming all the beans and barley they grow." Mr. Duckham, Baysham Court, Ross, Herefordshire: "Of course you have for some months past watched the corn returns: from them you will see our county is returned ridiculously low as regards the quantity sold, and as the price is one of the lowest averages in the kingdom, it is obvious a manifest injustice is done to the tithe payer and those whose rents are regulated by the corn averages. I quite agree that the growers of corn should make a return also. I feel that the whole of the growth and its value should be returned." Mr. Chandler, Aldbourne, Hungerford: "Although we may not have an M.P. with us this evening, we may congratulate ourselves that our agricultural members at this time are particularly desirous of rendering their services for any business that may be proposed to them, one of which should be to move for an inquiry into the corn returns. Whether this inquiry should be through the Board of Trade or Parliament, there is one thing quite certain—that it is the duty of this Club

not merely to reiterate the imperfections of the corn returns, which have been acknowledged by the officials of Government, and universally admitted, but to resolutely and determinedly set to work to amend them." This, the last extract we can find space for is almost amusingly suggestive or prophetic. The Club has now an M.P. amongst them, and one more than usually desirous of rendering service; but, alas! the officials of Government no longer acknowledge the imperfections of the corn returns. On the contrary, they seem to consider the system perfect, and duly snub the M.P. when he ventures to move in the matter. It is very plain that he has gone to the wrong shop; and, like Mr. Chandler in 1864, one hardly

knows whether this abuse—and a palpable abuse it is—should be corrected through the Board of Trade, or Parliament, or anybody, or anywhere else. It is surely manifest that the farmers have no right to go worrying Mr. Cave or Mr. Emerson Tennent. But then, what are they to do without some one "to advise and guide them in their difficulties," or *where* are they to seek redress? A Chamber of Agriculture without an agricultural department in the Government to communicate with is something like a body without a head; but still it is very noticeable how reluctant the Chamber has been, as yet, to speak to the necessity for such an office.

STOCK-FEEDING AND MEAT-MAKING.

SIR.—I have received several farm balance-sheets from able agriculturists who cannot realize my results, and I have arrived at the conclusion that the allowing of live stock to roam over fields is a great mistake. Our sheep, including ewes, are always folded, the fold being changed twice daily, so that they come on fresh ground, and do not go back on the polluted ground. Our bullocks are always under cover in sheds, either on paved floors or on sparred floors.

I repeat here what I wrote twenty years ago: "What would be thought of a proposition that, our food being spread out for us in a clean condition, we should exercise upon it, sleep upon it, and deposit our excrement on it?" and yet that is what we cause our animals to do, and then wonder that they are not so profitable as we could desire. My successful practice proves to me that our farming system must undergo very great changes. It is a mere question of time, for old customs are not surrendered at discretion, but only succumb to a long siege—witness our great towns opposing railways as a nuisance, and now lamenting their folly. The success of this farm has arisen from a combination of meat-making with corn-growing; and unless these two are carried on concurrently, I am satisfied that farming will fail to reach its most desirable position. The two systems must be united, for well-fed stock provide ample manure for corn-growing, while corn gives abundant straw as food, or, if need be, of litter. On the arable principle we gain the very great advantage arising from tillage. This in our strong clays is the key to profit, for it is the physical condition of such soils when undisturbed that causes them to be unproductive, either for grass or other products. The exclusion of air is the cause of their infertility, for they possess otherwise the elements of large crops.

The dependence on artificial manures is a great mistake, as compared with the use of well-made covered yard manure, especially where the land is at all adhesive. Said the ploughman of a large farmer in a neighbouring parish, who used to sell all his straw, and depend upon sheep and artificials, "See how the soil sticks to the breast of the plough, and refuses to leave it; that used not to be so when my master consumed his straw at home."

There is great truth in this; for, on a distant field where I have depended principally on artificial manures, the ploughing is always difficult, and the soil is benumbed and tenacious compared with others that have been treated with our shed manure.

But to return to our stock: see what takes place when the animals, especially the sheep, are permitted to range at large. They rush into and over fresh feed, always pressing forward in search of the choicest morsels, dragging down and tramping on valuable growing plants, taking care to pick out all young, tender, undeveloped stems or leaves, and thus injuring the plant. Supposing we were to pluck off from our potted or other plants each tender or developing leaf as soon as it appeared, would not the plant languish or perish? So it is with the field plant, after giving up to the dainty sheep its undeveloped parts. The growth of the plants and roots is thus crippled, and some farmers have found out that keeping sheep constantly on growing clover prevents that development of root which is so beneficial to the succeeding wheat crop.

That is why some farmers say that they get better wheat after clover twice mown than after a clover close fed all the season.

Another great mistake is to feed our stock wholly or principally with hay or roots. It is the admixture with dry food, and especially with straw chaff, that enables me to keep so much stock and make so good a balance-sheet.

But the system I commend and practise is one demanding a much greater concentration of capital than is our present practice. The tenant capital on this farm is at present £16 per acre, and this is by no means sufficient for the attainment of the most profitable result. From £20 to £23 or £25 per acre would pay a larger percentage of profit, because then more stock could be kept, and more purchased food consumed, and the corn would be more gradually sold than at present; opportunities for purchase of either stock, cake, or feeding stuffs might be better availed of. Our notions about farm capital must soon undergo a great change and reform: £20 on one acre will pay much better than £20 upon two acres, or £20 upon four acres, the latter being too often the case; and to prove this I will in my next paper give the detailed balance-sheet of this farm for the year 1867, merely stating now that after paying every expense, including £46 for the rent of 45 acres of hired land, there will be a clear balance of nearly £700 to pay rent on the other 130 acres, and profit on farm capital, which will be about 17 to 18 per cent. A fair crop and good price have made the year profitable. Discussing the other day the question of farm capital with a first-rate Norfolk farmer of 1,200 acres of light land, "Well," he said, "I don't see how much good can be done, even on a light-land farm, without a capital of £20 per acre." But then he does not depend upon the mere growth of the farm to feed his stock, but purchases £3,500 worth of cake annually. There is the test point of profit.

If the capital on this farm could be £24 or £25 per acre, every animal should be on sparred floors, and all the straw should be consumed, mixed, of course, with other feeding stuffs. This would make the farm more profitable; for experience has taught me that it is great folly and mistake not to consume every stem of straw. But then that necessitates such an increased number of live stock, that although we have 44 bullocks* and 180 sheep on 170 acres, the stock would have to be greatly increased.

Corn growing is dependent on meat making, and the two operations should go hand in hand on every farm. But, then, what a change would take place! and what happy results would accrue to the landlord, tenant, labourer, implement-maker, and the food-consuming population of merry England!!

Yours, &c.,

J. J. MURCH.

Jan. 16.

P.S.—Speaking of potted plants, what would our berry-land friends say (I mean those who deny the use or value of draining in strong clays), if I proposed to them to plug the hole in the bottom of the flower-pots to prevent the escape of water? and yet that is the condition of their undrained clays.

* Twelve of these sold fat at Christmas.

FOREIGN AGRICULTURAL GOSSIP.

The amount of the prizes which will be awarded at the exhibitions of fat stock about to be held in France will be the same as in 1867. The figures for each show are as follows:—

EXHIBITION	Cattle.	Sheep.	Pigs.	Total.
Amiens	£372	£80	£25	£477
Metz	302	80	25	407
Châteauroux...	402	108	38	548
Nantes	456	74	43	573
Bordeaux	482	56	38	571
Lyon	390	48	42	480
Arignon	250	67	22	339

A general show of fat stock for the whole empire will probably be also held at the market of La Villette. The French district State-shows of reproducing animals, implements, and agricultural products will be held this year in two series as usual. The first series is appointed to be held at Châlons, Orleans, Quimper, Rodez, Toulouse, and Montpellier, from May 2nd to May 10th; and the second series at Mentz, Lons-le-Saulnier, Arras, Rouen, Angoulême, and the Puy. The general inspectors of agriculture charged with the direction of these shows are: at Quimper and Rouen, M. Lefebvre de Sainte-Marie; at the Puy and at Montpellier, M. Rendu; at Arras and Orleans, M. Boitel; at Angoulême and Toulouse, M. Chambellant; at Rodez and Lons-le-Saulnier, M. Malo; and at Metz and Châlons, M. Lembezat. The programmes of these exhibitions will appear this year without any change from the arrangements of 1867.—French agriculturists wishing to purchase good reproducers of the pure Durham breed will be enabled to supply their wants to a small extent at the imperial establishment at Corbon, April 15th. This sale will comprise eight bulls of thirteen to thirty months old, and thirteen cows or heifers. The conditions of sale provide that the pedigree of each animal sold shall be forwarded to the purchasers immediately after the lots are knocked down. The Corbon *rocherie* is situated on the line of the Western of France Railway from Paris to Cherbourg, at no great distance from the Meizidon and Liseux stations. Another sale in the Brie will doubtless attract a good number of cultivators. Thus M. Garnot, of Genouilly, will sell, April 5, his fine Merino flock, comprising 300 rams and 700 ewes. The sale will be effected by public auction, but at the same time M. Garnot reserves to himself the privilege of making sales beforehand by private contract. Genouilly is on the Paris, Lyons, and Mediterranean Railway (Melun station). Brittany, less favoured than Normandy in respect to horse-breeding industry, is making an appeal to private "initiative." The Brest Agricultural Society, presided over by M. de Kerjegu, has adopted a scheme presented by Vicomte de Forsanz, for the creation of a horse club or society at Lesneven. The idea has been well received, the adhesions sent in to it have been very numerous, and the provisional members of the club will be soon called together to discuss the statutes with a view to the definitive constitution of the new society. Considerable efforts appear to be making with a view to the development of agricultural education in Germany.—Among other measures in this direction we may note that Herr Ladislas von Wagner has just been named Professor of Agriculture at the Royal Polytechnic Society of Pesh. Herr von Wagner was a member of the jury at the international steam-ploughing competition of Petit-Bourg; he was also inspector of the Austrian Commission at the Paris Universal Exhibition, and he is said to be a gentleman of wide and varied information.—The Vienna Society of Sugar Manufacturers has submitted to the Hungarian Agricultural Society a project for the establishment of a practical school for the manufacture of beetroot sugar. With this object a large sugar-making establishment, furnished with laboratories and all suitable means of experimentation, will be established in Hungary, and will receive every year 50 young people who will be gratuitously instructed in all the operations of sugar-making. The annual endowment of the establishment will not be less than £5,000, a sum which will enable it to enter largely on an

experimental policy, and to attempt all innovations which may present interest in connexion with the sugar manufacture. The arrangements also stipulate for the creation of a redemption fund, by means of which, after the elapse of 25 years, the school and manufactory will become the property of the State, and will be enabled to rank among the national establishments.—In Bavaria attention is being directed more particularly to the forests, the products of which are more and more sought after, and have acquired a value which leads proprietors of woods to the conclusion that the working of wooded soil does not require less care than the cultivation of arable land, and that time would not be lost in inquiring into the physical and meteorological conditions which may be most favourable to vegetation and to the rapid development of forest essences. Germany is no doubt rich in observations of this kind, and its foresters have acquired a renown which has long spread beyond the limits of the country; but the forest problem does not yet appear to be completely solved, as the Bavarian Government is occupying itself with the creation of meteorological forest stations, the organization and object of which have been carefully described by Professor Ebermayer, of Eschaffenburg, whose observations are principally directed to the following points: first, temperature of the air outside a wood at five feet above the wooded soil, and among the trees; secondly, daily difference between the maxima of temperature under the influence of a wood and the free air in a spot not wooded; thirdly, temperature of trees, at the height of man and at the summit, as compared with the temperature of the air and the soil; fourthly, comparative hygrometric state of the air in a wood and outside a wood; fifthly, extent of the evaporation of water in a wood and outside a wood; sixthly, comparison between the quantity of rain-water falling on wooded soil and unwooded soil; seventhly, quantity of rain or snow which in woods rests on the branches of trees and then evaporates so as to mix with the atmosphere; eighthly, quantity of water which in a wood or outside a wood penetrates into the soil at a depth of one foot, two feet, or four feet, and filtering through serves for the supply of springs; ninthly, quantity of water which the soil absorbs as compared with what is set free by evaporation; tenthly, temperature of wooded soil at the surface and at a depth of six inches, one foot, two feet, three feet, and four feet, similar observations on cultivable soil; eleventhly, determination of the ozone in the open air above wooded soil and among the leaves of trees. Seven of these meteorological forest stations have been at present established by order of the Bavarian Minister of Finance: the first is situated at Seeshapt, near the Lake of Starnberg, 610 metres (or about 2,033 feet) above the level of the sea; at Rohrbrunn, in the Spessart, 469 metres above the sea-level; at Altenfort, in Nuremberg, 300 metres above the sea-level; at Duschlberg, 925 metres above the sea-level; at Ebrach, 390 metres above the sea-level; at the Croix-Saint-Jean, in the forests of the Palatinate, 459 metres above the sea-level; and finally at Eschaffenburg, 133 metres above the sea-level. This last station, which has been established at the agricultural institute of the same name, is not in a forest district; but it, nevertheless, devotes itself to comparative observations on the meteorological phenomena occurring in and outside woods. The observations are taken twice a day—at nine o'clock in the morning and at four o'clock in the afternoon during the winter months, and at eight o'clock in the morning and six o'clock in the afternoon during the summer. At the end of each month, they are summed up in a single table, and are addressed to Dr. Ebermayer, who compares them, and deduces consequences from them. By means of this organisation, which is at present in only an early stage of its development, the Bavarian government hopes to be able to determine completely the climatic conditions of each of the great forests of Bavaria. Science and practical forestry can scarcely fail to gain much from the organisation of these new meteorological stations; and we may be justified in expressing a hope that the results acquired may worthily respond to the hopes conceived.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR FEBRUARY.

In all parts of the United Kingdom the weather has been remarkably fine for the time of year. Ploughing and sowing have therefore progressed somewhat rapidly, with the land in fine condition for the reception of the seed-furrow. The young wheats are looking strong and healthy, without the slightest sign of "winter pride." The limited quantities of wheat held in most countries have, owing to liberal importations from abroad, failed to have much influence upon the corn trade. Fine dry wheats have been taken off slowly, at an average advance in the quotations of 2s. per qr.; but inferior kinds have commanded very little attention, on former terms. There are, we understand, nearly 2,000,000 quarters of wheat still afloat for England; but we learn that nearly 100,000 quarters arrived and on passage have been taken for consumption in France, Holland, and Belgium.

There has been about an average business doing in barley, oats, beans, peas, and flour, at steady currencies.

The transactions in wheat in the leading continental markets on English account have been somewhat limited. Prices, however, have ruled very firm. In spring corn sales have progressed steadily, at strong quotations. The shipments of grain and flour from the United States have fallen off, owing to the high prices demanded by holders, and the increased freights to England.

For wool the demand has slightly improved, and English qualities have advanced $\frac{1}{4}$ d. per lb., at which a full average business has been transacted. The public sales of Colonial wool—at which about 120,000lbs. will be offered—have been commenced in London. As yet, the biddings have been by no means active. It is anticipated, however, that the bulk of the supply will find buyers, although the export trade is by no means active. The stocks of wool held here and on the Continent are represented as very moderate. Shearing has been commenced in most of our flock districts.

Good supplies of hay and straw have been on offer. Sales have progressed slowly. Meadow hay has realised £2 15s. to £4 5s., clover £3 10s. to £5 5s., and straw £1 10s. to £1 16s. per load.

Very few losses from disease have been experienced, either by our graziers or stockmasters. In most instances the stock has fattened rapidly.

In the Scotch markets, wheat of fine quality has sold steadily, and the quotations have had an upward tendency. Barley and most other articles have changed hands slowly, at late rates. The shipments of produce to the South have been very moderate.

The Irish markets have been scantily supplied with wheat, which has moved off freely on higher terms; whilst the value of other articles has been steady.

The quantities of potatoes brought forward have been large, about 5,000 tons having arrived from the Continent; nevertheless, good and fine parcels have sold as high as from 155s. to 170s. per ton.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that the importations of foreign stock have been very limited, even for the time of year, and that the supplies of English stock on offer in our leading markets have not increased, the demand for all breeds of beasts has ruled very inactive. In prices, however, compared with the previous month, very little change has taken place, the best Scots and Crosses having realised 4s. 10d. per 8lbs. The beasts have for the most part come to hand in very prime condition. The supply from Scotland has been remarkably good. From Ireland, however, it has been inferior.

The sale for sheep—the receipts of which have been only moderate—has been in a sluggish state; and the quotations have had a drooping tendency. However, the best Downs and half-breds have changed hands at from 4s. 10d. to 5s. per 8lbs. Most of the sheep disposed of have been heavy weighers.

A full average number of lambs has been on sale in the Metropolitan Market, at from 30s. to 36s. each.

Very few calves have been brought forward, yet they have been fully equal to the demand. Prices have ranged from 4s. 4d. to 5s. 8d. per 8lbs.

Pigs have moved off heavily, at barely stationary prices—viz., from 3s. 4d. to 4s. 2d. per 8lbs.

Stock generally has fared remarkably well in all parts of the United Kingdom, owing to the mildness of the season.

The annexed return shows the imports of foreign stock into London during the month:

	Head.
Beasts	3,269
Sheep	664
Calves	839
Pigs	105
Total	4,877

Imports at corresponding periods:

Total in 1867	26,206
" 1866	29,241
" 1865	22,904
" 1864	12,328
" 1863	10,500
" 1862	3,600
" 1861	8,485
" 1860	7,018
" 1859	7,809
" 1858	2,320
" 1857	4,720
" 1856	3,087
" 1855	2,839

The total supplies of fat stock exhibited in the Metropolitan Cattle Market were:

	Head.
Beasts	16,840
Cows	190
Sheep	83,480
Calves	593
Pigs	1,670

COMPARISON OF SUPPLIES.

Feb.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1867	17,140	260	79,710	1,081	1,979
1866	21,240	340	85,070	1,125	1,215
1865	21,158	480	66,590	1,196	2,714
1864	20,422	469	82,540	1,254	2,962
1863	19,437	495	75,480	1,067	2,777
1862	19,970	510	74,192	766	2,750
1861	18,760	500	83,280	934	3,069
1860	19,750	322	87,536	974	3,094
1859	17,694	499	70,691	1,034	2,537
1858	18,276	466	69,070	1,091	1,539
1857	17,629	457	74,430	1,172	1,975
1856	19,642	405	90,950	673	2,614
1855	17,436	385	91,180	596	2,703

The arrivals of beasts from our own districts, as well as from Ireland and Scotland, thus compare with the two previous years:—

	Feb. 1868.	Feb. 1867.	Feb. 1866.
From—			
Norfolk, Suffolk, &c. ..	6,700	5,800	7,100
Other parts of England.	2,000	2,420	5,350
Scotland	1,793	1,235	2,720
Ireland.....	820	380	700

The range in the prices of beef has been from 3s. 2d. to 4s. 10d., mutton 3s. 4d. to 5s., veal 4s. 4d. to 5s. 6d., pork 3s. 4d. to 4s. 2d. per 8lbs. to sink the offal.

COMPARISON OF PRICES.

	Feb., 1867.					Feb., 1866.			
	s.	d.	s.	d.		s.	d.	s.	d.
Beef from	3	4	5	4	...	3	6	5	6
Mutton	3	6	6	2	...	4	2	4	10
Veal	4	8	6	4	...	5	6	6	8
Pork	3	0	4	2	...	4	0	5	2

	Feb., 1865.					Feb., 1866.			
	s.	d.	s.	d.		s.	d.	s.	d.
Beef from	3	4	5	4	...	3	8	5	2
Mutton	3	6	6	6	...	3	8	6	0
Veal	4	4	5	6	...	4	0	5	8
Pork	3	4	4	10	...	3	6	4	6

Good supplies of meat have been on offer in Newgate and Leadenhall, and a fair quantity has been received from the Continent. The trade generally has ruled heavy, as follows: Beef from 2s. 10d. to 4s. 6d., mutton 2s. 10d. to 4s. 6d., veal 3s. 10d. to 4s. 6d., pork 3s. 10d. to 4s. 4d. per 8lbs. by the carcass.

AGRICULTURAL INTELLIGENCE,
FAIRS, &c.

BAKEWELL FORTNIGHTLY MARKET.—There was a considerable show of cattle, and a good business was done. Beef sold at from 7s. to 8s. per stone. Calving cows from £15 to £20 each. Heifers from £11 to £15 each. Sturks from £7 to £19 each. No wether or ewe mutton shown; a few rams, which may be quoted from 5d. to 6d. per lb. Pigs, 25s. to 40s. each, with moderate inquiry.

BANBURY FAIR.—Short supplies in both markets, and mutton up. Beef made from 4s. to 4s. 9d., and mutton 4s. to 5s. per 8lbs.

BOSTON SHEEP MARKET.—Not a large show of fat sheep, and trade appeared somewhat more lively, at from 6½d. to 7½d. per lb. Several hogs were shown, but there was little or no alteration of last week's rates.

CARLISLE HORSE FAIR.—The number of good, strong dry and farm horses was greater than that at any local fair during the last two years. There was a numerous attendance of dealers also from Scotland, Northumberland, and the south. Holders began by asking high prices; but the demand being in no way very brisk, they abated their terms very considerably, and before the close a reduction of fully 20 per cent. upon the requirements of the opening was established. It was, in fact, a very slow dull market, and, comparatively speaking, few transactions took place. The better class of strong horses for the road and farm brought from £40 to £44; good useful farm horses, £26 to £30; nice ponies, £15 to £18 each.

CONGLETON FAIR.—The show of cattle was small, and many of inferior quality; high prices were asked, and a very considerable business was done. Horses were few, and no good ones were offered. Store pigs were plentiful, and many were sold at reduced prices.

DORCHESTER FAIR.—In-calf cows and heifers were sold at from £13 5s. to £20 10s. each; fat cows, from £16 5s. to £28 10s.; barreners, from £8 to £14; fat calves from 7½d. to 8d. per lb. Down wethers fetched from 4s. to 4s. 6s. each; and fat horn ewes from 5½s. 6d. to 5s. each. The supply of horses was not so numerous as on previous occasions; but some useful animals were exhibited, and sales were effected at from £26 to £40 each.

DUMFRIES FAIR.—The bulk of the animals shown were in dealers' hands. The quality of the bulk of the stock was excellent. There was no demand for horses by farmers, as ploughing, owing to the open winter, was never so far forward this season in Dumfriesshire and Galloway as it is this spring. The demand was therefore chiefly among the dealers themselves, and by other buyers from a distance. The best class of heavy draught horses were in request, but the market during

the forenoon was not quick; most of the dealers had purchased at very high prices throughout the country, and they were asking correspondingly high figures. The market was therefore not so quick a selling one as was expected. By three o'clock a large proportion of the best horses had changed owners. Prices would be 8 to 10 per cent. higher than those at the Rood Fair in September last, and may be quoted as follows: The best heavy and young draught horses, suitable for heavy carting or railway lorries £50 to £60, and in one instance £70; strong useful horses, £35 to £48; ordinary, £15 to £25.

DUMFRIES PORK MARKET.—The temperature was low, and the carcasses were in fair condition. For very prime and neat carcasses prices were in some cases 1d. up on those of last Wednesday, but for other descriptions prices were unaltered. Best carcasses of 12 to 15 stones, 6s. 1½d. to 7s. 1d. per imp. stone; secondary descriptions and heavier weights, 6s. 8d. to 6s. 10d.; light and thin carcasses, 6s. 3d. to 6s. 6d.; extra large, from 6s.; Wigtownshire carcasses, 6s. 3d. to 6s. 6d. per imp. stone.

EXETER FAIR.—There was a small attendance of dealers, and the supply of beasts was not large. The best descriptions realized from 11s. to 11s. 6d., and inferior 10s. 6d. per score. Cow and calves and barreners commanded a ready sale, and late rates were maintained.

LINCOLN FAT STOCK MARKET.—A very small supply, and prices of mutton very high, wethers making 7½d. per lb. Beef from 8s. to 8s. 3d. per stone.

MEIGLE MONTHLY MARKET.—Amongst the sales effected were: Mr. Soot, Kinburney, sold nine stots at £22 each; Mr. Storrie, five stots at £18 each; Mr. William Birrell, two stots at £12 10s. each; also five sheep, at 22s. each, to Mr. Walker, the only sheep in the market.

NEWTON-STEWART FAIR.—There were very few horses. For good useful animals there was a brisk demand, at rather higher figures. The best quality of draught animals realized from £30 to £35, and, in one instance, we heard of £40 for one horse: secondary ranged from £15 upwards, according to age and quality.

OSWESTRY FAIR.—We had an extraordinary quantity of stock of every description, and buyers were quite equal to the supply. We have seldom had so good a clearance, when such a vast quantity of stock has been exhibited. Good beef and mutton were in brisk demand, beef making from 6d. to 7d. per lb.; mutton, from 7d. to 8d.; bacon and pork pigs, 5d. to 5½d. per lb., and store pigs were readily disposed of at good prices.

PENRITH FORTNIGHTLY MARKET.—The supply of sheep was much smaller than for some weeks past; but the show of beasts was a fair average, both as regards number and quality. The demand was brisk, and the whole was cleared out at an early hour. Sheep realized from 7½d. to 8½d. per lb., and beasts from 29s. 9d. to 31s. 6d. per stone.

PENRITH HORSE FAIR.—The show of horses, so far as either quality or number, was poor, dealers and buyers awaiting the fair which will be held at Wigton. The prices asked were large, from £20 to £40 being the figures generally prevailing; although, when a good chance of disposing of an animal presented itself, a pound or two was soon knocked off. Good work horses ranged from £30 to £35. Mr. Hutchinson, Brougham Castle, sold a really good useful mare for £28 15s.

RETTFORD FAT STOCK MARKET was well supplied with animals of a very superior quality. Amongst the sheep were about a dozen prime small clipped hogs, the first brought forward this season, by Mr. Payne, from his own flock. Prices round were somewhat in advance of those of a fortnight ago, with a lively demand.

RUGBY FAIR.—There was a supply of beef from 6d. to 7d. per lb.; a good supply of milch cows, which have dropped in price from £3 to £4 each, and also a plentiful supply of stores, but the sale of them was very dull, and the prices were a little lower. There was a good stock of fat sheep, which realised from 6d. to 7d. per lb. Togs were also plentiful, and sold from 25s. to 45s. each. There was a fair average of business done.

SOUTHMOLTON GREAT MARKET.—Supply of cattle below the average; good stock sold well; prices without alteration. Cows and calves £14 to £17, beef 11s. per score; steers good sale at advanced rates; live mutton low sale at late prices; horn couples 34s. to 38s., not ditto 42s. to 50s.; fat pigs 9s. per score; slips upward tendency.

STRATHDON FAIR.—One cow sold at £16, two two-year-old stots for £29, and a one year and six months quey for £10, a calver cow for £11, two stots at £17, a cow at £12, and a yearling at £9, two queys for £25 10s., a cow for £19, two two-year-old stots at £11 per head, a bull at £9 5s., six two-year-old stots at £19 10s. a head, four stots and queys for £67. The market for fat beasts was considered to be some 30s. or 40s. under last year's prices; yet there was a deal of sales made, and the attendance of dealers and fleshers was pretty numerous.

WIGTON HORSE FAIR.—There was a great deal of business done in the afternoon and evening before the fair. On the whole, the fair was a larger and more busy one than has been the case for years, notwithstanding that a great many horses were bought up some days previous. The show was only poor as regarded good saddle and harness horses and hunters, and any good animals of this class, at not too much money, were looked after sharply. Heavy animals were in good demand, and brought even more money than the high prices of the past two years.

WORCESTER MONTHLY MARKET.—There was a large supply of both cattle and sheep. Beef was a dull sale in consequence of the market being overstocked, and mutton fetched about the same as at last market.

IRISH FAIRS.—SLAANE fat cattle brought from £16 10s. to £22 per head, or 58s. to 60s. per cwt., which was the top price; second class 50s. to 54s.; inferior 44s. to 48s. per cwt. Promising milch cows commanded from £14 to £17 10s. each, strippers and dry cows from £8 10s. to £11 10s. each, heavy springing cows, of fair quality, from £14 to £18 a-piece, some nearly worn-out animals £7 10s. to £10 each; three-year-old heifers £12 to £15 each, two-year-olds £9 10s. to £12 10s.; three-year-old bullocks and half-fat cows from 11 to 15 guineas, two-year-old bullocks and yearlings from £9 down to £4 per head. In the sheep fair best wethers shaggy shade over 7d. per lb., and ewes from 5d. to 6d. Bacon (clean pigs) went as high as 48s. per cwt., sinking the offal, store pigs from 40s. to 50s. each for strong ones; slips and runners 24s. to 30s. each; suckers and weanlings 18s. to 36s. each.—CAMLOUGH: Beef sold for 6d. to 7d. per lb. (average per head £15), springers brought £9 to £18 each, milch cows from £8 to £12 per head, strippers £10, and were in much request. In the young stock departments two-year-olds sold for £7 to £10 each, yearlings averaged £4 5s. There was a fair attendance in the horse fair. Prices ranged from £25 down.—NAAS: Demand good for springers and milkers at from £12 to £18. Bullocks of a good quality and in a forward state met with a ready sale; three-year-olds at from £13 to £16, two-year-olds from £8 to £10, yearlings from £4 to £5 10s. Mutton sold at from 5d. to 6d. per lb., sinking the offal.—CLOGHEN: The supply of fat Pigs was estimated at about 2,050. The prices paid gave general satisfaction, which were from 48s. to 50s. per cwt.—ENNISCORTHY: Beef, from 50s. to 55s. per cwt.; milch cows, springers, and three-year-old cattle, from £10 to £16 each; strippers and dry cows averaged £9; two years old, from £6 10s. to £9 10s.; yearlings, from £4 to £6 each; mutton, from 4½d. to 6d. per lb.; hoggets averaged 36s. each. The prices realized in the pig fair show an advance in present value. Fat animals went up to 45s. per cwt., and in a few instances to 48s. per cwt. Stores ranged from 35s. to 45s.; slips, from 14s. to 27s.; bonhams, from 9s. to 13s.; agricultural horses, from £9 to £20 each.—COOTEMILL: Pigs, hoggets, 45s. to 56s.; bonhams, 11s. to 14s. each; porkers, 42s. to 46s. per cwt.; springers, £12 to £16 10s.; strippers, £6 16s. to £9; weanlings, £2 5s. to £3; yearlings, £4 3s. to £6 5s.; two-year-olds, £6 to £9; beef, 6½d. to 8d. per lb. GRAIGUE: Beef was in brisk demand at from 56s. to 60s. per cwt. for top quality; second class, 46s. to 50s. Young store cattle sold well, three-year-old heifers and bullocks bringing from £13 to £15; two-year-olds, £10 to £12 10s.; yearlings, £7 to £9; and calves, £3 10s. to £6 10s., according to quality and condition. Springers and milch cows met an active demand at prices varying from £14 to £22 each, and strippers £8 to £10. Prime mutton ranged from 5½d. to 6½d. per lb.,

and second class about 5½d. Hoggets high and in fair demand at from 34s. to 38s. each. The pig fair was unusually large, and pork showed a considerable advance, say 4s. per cwt. in price, selling at about 49s. per cwt.; forward stores 50s. to 55s. each, and bonhams 15s. to 20s.

SALE OF THE LATE MR. PACKE'S HERD OF SHORTHORNS.

This sale took place at Burton Randalls Farm, near Loughborough, when there was a very numerous attendance, as, in fact, a little too strong for the arrangements. The ring was pitched adjoining some tall elms, and, what with a high wind, it was a matter of difficulty for either the auctioneer or the bidders to make themselves heard. Mr. Potter, of Nottingham, had to undertake the business single-handed, as Mr. Holland, of Leicester, who was jointly concerned, was prevented from putting in an appearance from indisposition. The crowd was very unruly, with frequent fights by the ring side, and two or three of the wounded carried away in carts. The auctioneer after occasionally praying for Order had to threaten that he would not proceed; there were few or no catalogues to be obtained, and refreshments were rarely to be had for love or money. The animals were brought up in good fair order, but there were many old barren cows amongst the lots, the sum total reaching to £3,573 19s. 6d.

Colonel Towneley's representative gave the two top prices for some of their own sort, 130 gs. for Towneley Butterfly, and 110 gs. for Wharfedale Butterfly; while Mr. McIntosh purchased Auricula for 71 gs., Lady Knightley for 45 gs., and Dahlia for 40 gs.; Mr. Roper took Buttercup for 65 gs., and Cherry for 45 gs.; and Mr. Harris Iris for 48 gs. Mr. Taylor, from Bridlington, had Princess Dagmar for 46 gs., Miss Valentine for 41 gs., and Little Red Riding Hood for 41 gs.; Mr. H. Humphreys bought White Butterfly for 51 gs., and Red Cabbage for 40 gs.; and Mr. J. S. Jordan Camellia for 56 gs., and Camilla for 40 gs. Mr. Fenton gave 51 gs. for Princess Mary, Mr. Fawcett 50 gs. for Empress, Mr. Miles 48 gs. for Clio, Mr. Foster 40 gs. for Goody-Two-Shoes, and Mr. E. Wortley 40 gs. for Princess Imperial. The other cows and heifers made but indifferent returns, and the best calf sold to Mr. Richard Sutton for 37 gs. The highest priced bull was knocked down to Mr. J. S. Jordan for 110 gs., and a "milk white" steer known as the "Warwick beast" to Mr. Miles, of Keynsham, for 52½ gs. This animal, very grand in his appearance, but hard in his touch, has already been out in the Midlands, but he will be kept on for the next Christmas shows. Seventeen volumes of *The Herd Book* announced as a complete set will henceforth adorn the library of the Speaker of the House of Commons, for whom they were purchased at 10½ gs. The sheep on the second day made close upon £1,900.

GRASSHOPPERS IN AMERICA.—The ravages of these little pests seem to have begun in earnest. The hemp crop of the county has been almost entirely destroyed. A few crops may escape them. One day suffices for them to clean off a hemp field as bare as before the sowing. The blue grass is in many places destroyed, and has suffered much wherever they have gone. Timothy and clover have also been very greatly damaged. The oat crop, it is thought, will be utterly ruined, as they prefer that to wheat, which they have so far only slightly damaged. The corn is not exempt, but has been less injured than any other crop, except wheat. The gardens have suffered terribly, nearly all early vegetables having been eaten up by them. They swept a garden bare in a few hours. A lady informs us that in the morning she had as fine a garden as she ever saw, and in the evening scarcely a vestige of it was left. It is consoling to know that the weeds also suffered.—*Minnesota Paper.*

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

February, on the whole, has been a fine month, notwithstanding occasional storms and rain. Field-work, therefore, has been making progress. Beans and peas have been well got-in, and other spring-corn will soon follow with a continuance of favourable opportunities. The wheat plant has passed through the fluctuations of temperature generally unharmed, though in low-lying places and in heavy soils there is not yet much promise. The weather not having been frosty has been against thrashing, though farmers could not do much else, and samples of wheat have therefore come to market in poor condition, though at the close of the month they were better in hand. But little difference of value has occurred, the fluctuations closing about 1s. per qr. against prices, this being seen in the London averages, which show the state of the market a week later than the general averages of the country, the decline so appearing 1s. 4d. per qr. This may have been occasioned by the mildness of the season and the expected foreign supplies; but with many of these now disposed of, and foreign markets, especially France, dearer, there seems great probability of a reaction ere long; indeed, with 80s. per qr. paid at Danzig for the best high-mixed wheat, and very little to be had at this extraordinary price, not much can come from this quarter, and the few arrivals thence will pass on to town millers, who alone can afford to pay such rates. Marseilles, with immense supplies, finds them quickly absorbed by the interior demand; and France, not content with these imports, has taken about twenty vessels out of a week's arrival of eighty off the British coast, at fully 1s. per qr. advance, having also forced up the Liverpool market by a demand for Californian white. The *Mark Lane Express* annual estimate of our own crop appeared on the 17th Feb., and it is plainly the most unfavourable that has lately issued from the press: "Under, or much under, an average" are the lines which perpetually greet the eye; and the deficiency, without any possible accuracy attainable on such variable reports, leaves the impression that unless we have stocks of old in wealthy farmers' hands, beyond what foreign imports can do for us, before next harvest we may be badly off, either in the scarcity of food or prices paid for it. It is estimated that our crop has run four million quarters short, and with our average annual imports of about six millions, our necessities must be about ten millions. Australia has been visited by rust, raising prices 33 per cent., and California and Chili are not expected to make such exports as were lately relied on. Very much will depend on what the United States can do, and this is very doubtful. The following prices were recently current at the places named: The best Richelle white wheat at Paris was worth 80s. and the finest red 77s.; Polish Odessa at Antwerp 76s.;

Hungarian or Banat 69s. per qr. Sandomirka at Brussels has brought 78s. 3d., and a cargo off the British coast has been taken for Spain at 78s. Zealand white wheat at Rotterdam brought 74s. 6d., Saale red at Hambro' 72s., red at Cologne 66s. 6d., at Frankfort 67s. 6d., at Stettin 69s. per qr. The bulk of the wheat at Danzig only weighed 54½ to 58½ lbs. per bushel: fine 61 lbs. was sold at 80s., wheat in Australia 64s., white at Odessa 52s., Polish red 54s. 6d., hard in Algeria 65s., spring wheat at Montreal 59s. per 480 lbs.; at New York 64s., white to 83s. 6d. per qr.

The first Monday in Mark Lane has commenced on a small arrival of English wheat, with but a moderate quantity from abroad. The show of fresh samples on the Kentish and Essex stands was limited, and the condition unusually bad. The finest picked lots scarcely realized the previous rates. The rough samples, together with several left over from the former week, were wholly unsaleable. The foreign trade was inactive, but there was no disposition to accept less money, excepting for the lower qualities. There being few cargoes off the coast, through the prevalence of contrary winds, prices were without change. The general want of condition and dull reports from London made heavy markets through the country, and some places quoted lower prices. Leeds, Stockton, Newbury, Gloucester, and several other places quoted a decline of 1s. St Ives, Bristol, and Bury St. Edmunds were down 1s. to 2s., and Liverpool gave way 3d. per cental on Friday. Glasgow was about 1s. per qr. cheaper for Wheat, but Edinburgh was only dull, and this was the case at Dublin and Belfast.

The second Monday exhibited smaller returns both of home-grown and foreign wheat. The number of fresh samples on the Essex and Kentish stands was small, and the condition, though still poor, somewhat improved. This, however, did not prevent a decline of 1s. per qr. on the best samples, while inferior qualities were more difficult to quit, at a reduction of 2s. per qr. There was also very little doing in foreign, and all but choice white qualities were reduced 1s. per qr. Though there were but few arrivals off the coast, holders accepted 1s. per qr. less money for those on offer. The weather, though on the whole fine, not being dry enough to make much improvement in newly thrashed samples, the trade this week in the country was generally heavy, and sales made at less money. The majority of instances showed a reduction of 1s. per qr., which was noted at the following places: Lynn, Spalding, Rugby, Sheffield, Louth, Market Rasen, Gainsborough, Leeds, Stockton, Hull, Dunstable, Monmouth, and Wolverton. Yet there was an exception to this at Liverpool, both markets being dearer—viz., 3d. per cental on Tuesday and 2d. on Friday, more

especially, however, for white wheat, in consequence of a French demand, which took off a large quantity of Californian. In Scotland wheat was a dull sale, and Dublin found but a small demand, at former rates.

The third Monday had moderate arrivals, both English and foreign, and the show of fresh samples from the near counties was very small, the condition for the most part very poor. The market, in consequence of very unfavourable advices from Australia, opened firm, and holders generally insisted on 1s. advance for fine samples, some of which went off at this improvement; but the rest were very difficult to quit, at former prices. As regarded foreign sorts the demand was limited, but on fresh American red 1s. more money was obtained, and all good qualities were well supported. The fleet off the coast not having had time to send up samples, prices were nominally the same. The country markets this week were divided between firm or dearer. The following and most of those held on Saturday were up 1s. per qr.—viz., Boston, Spalding, Sleaford, Lynn, Gainsbro', Birmingham, Ipswich, Stockton-on-Tees, and Bristol, Liverpool noting an advance of 2d. to 3d. per cental both on Tuesday and Friday's markets. St. Ives and Gloucester were 1s. to 2s. higher, and Bury St. Edmunds 2s. Glasgow was 1s. per qr. dearer for American wheat, but Edinburgh was without change. Dublin and Belfast were unaltered in price.

On the fourth Monday there was but a small arrival of English wheat, but the foreign supplies had increased. The show of samples during the morning from Kent and Essex was limited, and the condition of those from Kent was decidedly improved. Factors endeavoured to obtain 1s. per qr. more early in the morning—most of the country markets held on Saturday noting this improvement; but this stopped business, and sales could only be made readily at the rates of the previous Monday. A large business had been transacted in floating cargoes at a rise of 1s. to 2s. per qr.

The arrivals in the port of London for four weeks were 13,399 qrs. English, 47,405 qrs. foreign, against 19,224 qrs. English, 38,918 qrs. foreign for the same period last year. The London exports for the same time were 3,083 qrs. The London averages commenced at 74s. 11d., and closed at 73s. 7d.; the general average began at 72s. 4d., and finished at 73s. The imports into the kingdom, for four weeks up to the 15th February, were 1,906,537 cwts. wheat, 193,796 cwts. flour, against 1,617,067 cwts. wheat, 242,795 cwts. flour, in 1867.

The flour trade throughout the month has been quiet, and values little altered. The top London price has stood at 64s.; but, with rather larger supplies from the country, and mild weather for the most part, prices have receded about 1s. for the most part per sack, with very little doing at the last market. The influence of the rise at Paris has scarcely been felt, the demand for all foreign descriptions having been only retail. Stocks in London are small. The London imports for the month were 82,550 sacks of English make, 7,592 sacks 3,777 barrels foreign, against 79,592 sacks

country, 9,401 sacks 37 barrels foreign, 1st year.

During the greatest part of the month, maize, with moderate arrivals, sold in retail at unaltered rates; but as these increased, amounting, for the entire month, to 28,686 qrs., prices gave way about 2s. per qr.; sales ex-ship having been made at 44s. per quarter.

The barley trade has generally been inactive, but prices have been firm; the dullness in the malt trade, and free use of sugar in the manufacture of beer, accounting for the limited demand of malting sorts, and the unprofitableness of pig feeding greatly curtailing the trade in grinding; so that, with little more than half the foreign supply received last year, prices finished rather lower, though 36s. was still procurable. The imports for the month have been 12,650 qrs. British, 17,267 qrs. foreign, against 13,184 qrs. British, 30,380 qrs. foreign, in 1867.

The malt trade, with but a slow demand, has been hardening, till about 1s. to 2s. per qr. more has been demanded for good qualities.

With an improved English supply of oats, and a great falling-off in foreign, they have been about equal in quantity, though both together have not reached to a fortnight's average; while Scotland and Ireland have scarcely contributed anything. Notwithstanding the reduced arrivals, buyers have been extremely cautious, and mostly supplied themselves from granary samples; so that good fresh qualities from the ship's side, or of English growth at the railway-station, have quietly gained 1s. per qr. in value, and fine 38lbs. Russian were held at 29s. per qr. Shipments are now expected from the Baltic and Holland as soon as a favourable wind sets in; and for these, wholesale buyers seem determined to wait, though it is very probable, from the general scantiness of stocks, that, on receipt of liberal arrivals, the market will be forced up by the necessities of buyers. The imports for the month have been, in English qualities, 20,725 qrs., Scotch 800 qrs., Irish only 140 qrs., foreign 20,772 qrs., against 8,254 qrs. English, 1,437 qrs. Scotch, 3,210 qrs. Irish, 39,213 qrs. foreign for the same period in 1867.

The business in beans has been limited during most of the month for want of supplies, and the high rates demanded; but on the fourth Monday, there being a good arrival of foreign, English sorts scarcely maintained their value, and foreign were difficult to sell. The imports into London for the month were 2,480 qrs. English, 4,765 qrs. foreign, against 5,531 qrs. English, 4,392 qrs. foreign in 1867. The decline in maize, should it continue, will tend to keep this pulse dull.

Hog peas during the month have been firm, but very little inquired for. The value of white boilers has been kept up by a Swedish demand, which has taken off 2,177 qrs.; but with the inquiry lessened, and mild weather in England, prices have lately been scarcely maintained, and the best boilers were not worth over 46s. The imports into London during the month were in English sorts 924 qrs., in foreign 700 qrs., against 2,277 qrs. English, 1,677 qrs. foreign in 1867.

With fair supplies of linseed, prices have given

way about 1s. per qr.; but there has been a very good demand for cakes.

The cloverseed trade has hitherto been disappointing, though lately a demand has been forced on by the fineness of the weather. English qualities of red, it would appear, are more plentiful than expected, the fineness of last August having ripened a fair quantity of seed. Fine cow-grass can be had at 70s. per cwt., and good French at 50s. to 56s. Trefoil also has met more inquiry, at fully the previous rates. Spring tares sell moderately at from 46s. to 56s., according to size and quality. Other seeds have been very quiet.

CURRENT PRICES OF BRITISH GRAIN AND FLOUR IN MARK LANE.

		Shillings per Quarter.	
WHEAT, Essex and Kent, white...	old 75 81..new 67 to 78		
	red	73 76..	66 74
Norfolk, Lincoln, and Yorkshire, red.....			66 74
BARLEY	35 to 36..Chevalier, new 39		47
Grinding	36 38..Distilling		37 41
MALT, Essex, Norfolk, and Suffolk 62 67.....	extra 69		73
Kingston, Ware, and town-made 62 67.....			69 73
Brown			50 58
RYE			43 49
OATS, English, feed 20 to 33.....	Potato		30 35
Scotch, feed	Potato		00 00
Irish, feed, white 24	Fine		29 33
Ditto, black	Potato		28 33
BEANS, Managan	Ticks		40 43
Harrow	Pigeon		46 54
PEAS, white, boilers	48 Maple 46 to 47 Grey, new 43		44
FLOUR, per sack of 260 lbs., Town, Households			60 64
Country, on shore	50 to 53 ..		54 58
Norfolk and Suffolk, on shore			48 49

FOREIGN GRAIN.

		Shillings per Quarter.	
WHEAT, Danube, mixed	74 to 77.....old, extra 79 to 86		
Königsberg	71 76.....extra		74 79
Rostock	73 78.....fine		75 78
Silesian, red	69 74.....white		72 77
Pomera, Mecklenburg, and Uckermark	red old		70 76
Russian, hard, 62 to 67.....St. Petersburg and Riga 66			71
Danish and Holstein, red 67 70.....	American 67		73
French, none	Rhine and Belgium		67 71
Chilian, white 74	Californian 77 ..		Australian 79 81
BARLEY, grinding 35 to 37.....distilling and malting 40			42
OATS, Dutch, brewing and Poland 26 to 33.....	feed 24		29
Danish and Swedish, feed 27 to 31.....	Stralsund		27 28
Canada 25 to 28, Riga 27 to 29, Arch. 27 to 29, P'sbg. 29			31
TARES, per qr.			48 58
BEANS, Friesland and Holstein			42 46
Königsberg	41 to 45.....Egyptian		43 44
PEAS, feeding and maple	43 48.....fine boilers		46 47
INDIAN CORN, white	46 48.....yellow		44 45
FLOUR, per sack, French	57.....Spanish, p. sack 52		57
American, per bbl.	34.....extra and d'ble 36		58

BRITISH SEEDS.

MUSTARD, per bush., brown 14s. to 16s. white	9s. to 10s.
CANARY, per qr.	66s. 76s.
CLOVERSEED, red	54s. 84s.
CORIANDER, per cwt.	20s. 21s.
TARES, winter, new, per bushel	6s. 7s.
TRIFOLI	20s. 22s.
RYEGRASS, per qr.	18s. 19s.
LYNSED, per qr., sowing 70s. to 72s., crushing	62s. 68s.
LYNSED Cakes, per ton	£11 10s. to £11 15s.
RAPESEED, per qr.	56s. 60s.
RAPE Cakes, per ton	£8 0s. to £8 10s.

FOREIGN SEEDS.

CORIANDER, per cwt.	21s. to 22s.
CANARY	43s. 44s.
CLOVERSEED, red 44s. to 56s., white	68s. 83s.
TRIFOLI	16s. 18s.
RYEGRASS, per qr.	17s. 18s.
HEMPSEED, small 38s. per qr., Dutch	40s. 42s.
LYNSED, per qr., Baltic 58s. to 60s., Bombay	67s. 68s.
LYNSED Cakes, per ton	£10 5s. to £12 5s.
RAPESEED, Dutch	58s. 60s.
RAPE Cakes, per ton	£8 0s. to £8 10s.

IMPERIAL AVERAGES.

For the week ended February 15, 1898.			
Wheat	45,626½ qrs.	73s.	0d.
Barley	58,671½ ..	42s.	5d.
Oats	11,442 ..	26s.	9d.

COMPARATIVE AVERAGES.

Years.	WHEAT.		Years.	BARLEY.		Years.	OATS.	
	Qrs.	s. d.		Qrs.	s. d.		Qrs.	s. d.
1864.....	81,793½	40 8	62,437½	51 11	16,593½	19 1		
1865.....	67,929½	38 4	60,089½	29 2	9,366½	19 1		
1866.....	61,056½	45 0	63,864½	33 9	9,844½	23 0		
1867.....	42,427½	59 10	42,045½	43 9	8,718½	23 6		
1868.....	45,626½	73 0	58,671½	42 5	11,442	26 9		

AVERAGES

FOR THE LAST SIX WEEKS:		Wheat.		Barley.		Oats.	
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Jan. 11, 1898.....		69 6	41 6	25 5			
Jan. 18, 1898.....		71 6	42 1	25 7			
Jan. 25, 1898.....		72 4	42 6	25 6			
Feb. 1, 1898.....		73 6	42 4	25 11			
Feb. 8, 1898.....		72 4	42 7	26 0			
Feb. 15, 1898.....		73 0	42 5	25 9			
Aggregate of the above ..		72 0	42 3	26 0			
The same week in 1897.....		59 10	43 9	23 6			

FLUCTUATIONS in the AVERAGE PRICE of WHEAT.

Price.	Jan. 11.	Jan. 18.	Jan. 25.	Feb. 1.	Feb. 8.	Feb. 15.
73s. 4d.
73s. 0d.
72s. 6d.
72s. 4d.
71s. 6d.
69s. 6d.

HOP MARKET.

BOROUGH, MONDAY, Feb. 24.—During the past week a very limited trade has prevailed; prices at one time ruled a little firm, but the week closed with a dull market at late rates. Foreign markets show no alteration, trade being still very much depressed.

New York advices to the 12th inst. report a quiet market, at last quotations. The continued importations of foreign hops still affect adversely both prices and trade.

Mid and East Kent	£5 5	6 15	7 15
Weald of Kents	4 10	5 5	6 6
Sussex	4 4	4 10	5 5
Farnhams	7 0	7 15	9 0
Yearlings	4 0	4 10	5 0

CANTERBURY HOP MARKET, (Saturday last).—The trade continues without animation, but our stock is now very low: we have not a pocket of Weald, Mid Kent, nor Sussex hops in store, and the few lots of East Kent Goldings on hand will not last long. East Kent Goldings, £6 to £8 3s.

WORCESTER HOP MARKET, (Saturday last).—At the reduced prices more business is passing here; but the quantity of hops offering by planters is now so limited that transactions on this market are restricted.

POTATO MARKET.

SOUTHWARK WATERSIDE.

LONDON, MONDAY, Feb. 24.—During the past week the arrivals both coastwise and from abroad have been more liberal. The trade has been slow at the following quotations: Yorkshire Flukes..... 140s. to 170s. per ton. Ditto Regents

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, Feb. 24.—Large supplies of potatoes are on sale. The trade has ruled dull, at barely late rates. The import into London last week consisted of 425 bags, 266 sacks from Boulogne, 3,626 sacks 742 bags Dunkirk, 500 barrels Harlingen, 303 bags 2 barrels Rotterdam, 609 tons Chen, 348 Ronen, 98 Nantes, 100 Honfleur, 54 Portbail, 55 St. Malo, and 65 tons from Havre.

Regents	130s. to 170s.	per ton
Flukes	130s. to 170s.	"
Rocks	100s. to 130s.	"
French	100s. to 105s.	"

COUNTRY POTATO MARKETS.—**BARNSELY** (Saturday last): Rocks, best samples 14s. to 14s. 6d., Regents 15s. 6d. to 16s. per load.—**DONCASTER** (Saturday last): A large supply of potatoes, more particularly Regents and Finkes, and there being a steady demand all passed off at about the following prices: Regents 14s. 9d. to 16s. per load of 18 stones, Finkes 15s. to 16s.—**MANCHESTER** (Saturday last): Potatoes 10s. to 20s. per 252lbs.—**PONTEFRAC** (Saturday last): Potatoes 1s. 6d. per weigh.—**YORK** (Saturday last): There was not an extensive supply of potatoes, and dealers demanded high rates for superior qualities, viz., from 17s. to 18s. per tub of 280lbs.; the retail price was from 1s. 2d. to 1s. 3d. per peck. Ash-tops, for seed, fetched 8s.; and forty-folds, also for seed, 6s. per bushel.

PRICES OF BUTTER, CHEESE, HAMS, &c.		
BUTTER , p. cwt.—s. s.	CHEESE , per cwt.—s. s.	
Freeland.....124 to 130	Cheshire.....56 to 74	
Jersey.....90 108	Dble. Gloucester.....56 66	
Dorset.....—	Cheddar.....66 76	
Carlisle.....—	American.....48 58	
Waterford.....—	HAMS : York.....80 86	
Cork.....94 116	Cumberland.....80 86	
Limerick.....—	Irish, new.....80 84	
Sligo.....—	BACON :—	
Fresh, per doz., 14s. 6d. to 17s. 0d.	Wiltshire.....63 66	
	Irish, green.....56 60	

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Feb. 24.—Trade is dull, with a drooping tendency in prices.

Dorset, fine old.....	90s. to 100s. per cwt.
Devon.....	None.
Fresh.....	13s. to 17s. per doz.

CARMARTHEN, (Saturday last).—Small supply of Butter at market this day. Good quality advanced 1d. per lb. since last market. We must quote the price from 11d. to 11½d. Cheese ranges from 2½s. to 3½s.

CORK BUTTER MARKET, (Friday last).—Thirds, fourths, fifths, and sixths of kegs 4s. per cwt. less. Currency, ordinary butter 10s. per cwt. less, mild-cured 10s. per cwt. less, sponged butter 2s. per cwt. less. Ordinary, first quality 117s. to 120s., seconds 115s. to 118s., thirds 102s. to 105s., fourths 90s. to 93s., fifths 60s. to 63s., sixths 41s. to 44s. per cwt. Mild-cured, first quality 117s. to 120s., seconds 117s. to 120s., thirds 111s. to 114s. per cwt.

GLASGOW, (Wednesday last).—A fair supply of cheese which met with a good steady demand, at about former rates. There were 1,411 cheese laid down, and about 30 tons sold. Cheddars, new 48s. to 56s., Dunlops, new 45s. to 53s.

MESSRS. CORDEROY'S CHEESE CIRCULAR, (Thursday last).—We have but little alteration so note in the cheese trade since our last. Really fine Cheshire cheese are saleable at satisfactory prices. The demand also continues for low-priced sorts—say 48s. to 54s. Scotch cheese of prime quality are more inquired for. American cheese meets a steady sale at 54s. to 58s. for best factory dairies. There is but little left in the market under the former price. The stock in New York is very large, and a break-down in price is looked for as essential to a profitable trade. The arrivals this week are 9,599 boxes.

POULTRY MARKETS.—Turkeys 5s. to 10s., Geese 5s. to 8s., Ducks 2s. 6d. to 3s. 6d., tame Rabbits 1s. 3d. to 2s., wild ditto 1s. to 1s. 3d., Pigeons 10d. to 1s., Hares 4s. to 5s., wild Ducks 2s. to 2s. 6d., Widgeons 1s. to 1s. 6d. each. Surrey Fowls 9s. to 15s., ditto Chickens 6s. to 8s., Barndoor Fowls 4s. 6d. to 6s. per couple. English Eggs 13s., French 11s. per 100. Fresh Butter 1s. 2d. to 1s. 6d. per lb.

HAY MARKETS.

LONDON, SATURDAY, Feb. 22.

SMITHFIELD.—A moderate supply.

CUMBERLAND.—A moderate demand.

WHITECHAPEL.—A fair trade.

	Smithfield.		Cumberland.		Whitechapel.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
MEADOWHAY.....	55 0	55 9	55 0	55 0	50 0	57 6
CLOVER.....	70 0	108 0	70 0	108 0	7 0	110 0
STRAW.....	30 0	36 0	30 0	36 0	30 0	36 0

BIRMINGHAM, MONDAY, Feb. 17.—Hay, 80s. to 90s. per ton. Straw, 2s. 6d. to 3s. per cwt.

BRISTOL, FRIDAY, Feb. 21.—Hay 77s. 6d. to 10s. Straw 2s. 2d. to 2s. 6d. per doz.

WORCESTER, TUESDAY, Feb. 18.—Hay, old, 5s. 90s.; ditto new, 70s. to 75s., Straw, 46s. to 50s. per ton.

ENGLISH WOOL MARKETS.

CITY, MONDAY, Feb. 24.—No further change has taken place in the value of English wool, but the demand continues fairly active, being principally for home consumption. Export there is very little doing. The quantity on offer extensive, and of fair quality.

CURRENT PRICES OF ENGLISH WOOL.		s. d. s.
FLEECES —Southdown hoggets.....	per lb.	1 3 10 1
Half-bred ditto.....		1 3 1
Kent fleeces.....		1 1 1
Southdown ewes and wethers.....		1 1 1
Leicester ditto.....		1 1 1
SCABS —Combing.....		1 0 1
Clothing.....		1 3 1

BRADFORD WOOL MARKET, (Thursday last).—Withstanding the excitement in Liverpool, the tone of the market is certainly not more cheerful than it was a week since. Staplers, though they have sold fairly during the week, have been rather quiet than otherwise this morning. This is owing, no doubt, to Messrs. Louis's sale this afternoon, many buyers doubtless expect to supply themselves with the scarcity of all the best wools, which we referred to last week still causes inconvenience, and tends to uphold rates. However, though the tendency is upward, do not advance rapidly, and the quotations we gave a fortnight ago are a halfpenny below to-day's.—*Bradford Observer*.

GLASGOW WOOL MARKET, (Saturday last).—A steady demand continues for all classes; transactions are now numerous, and as a whole represent a much larger business than we have been accustomed to for some time past. The scarcity of good clips of laid Highland in this market is still apparent, and causes a hardening tendency. There is still change to note regarding other classes, but the same approved feeling which existed last week still continues.—*L.M.*

LEEDS (ENGLISH AND FOREIGN) WOOL MARKET.—There has been a little falling off in the demand for English wool, but there is no material alteration in prices. While the supply in the country is much above the average of the last few years, it is not very heavy in the hands of the staplers, who, if they were to sell out, would find it difficult to replace to advantage. There is a fair consumption of colonial and other clothing wool, and prices have undergone no change.

LEICESTER WOOL TRADE.—More business has been done in wool, and prices are higher. Farmers' lots are now making 35s. to 36s. per tod. This has given an impetus to worsted yarns, which are firmer, and on some sorts are quoting higher prices.—*Leicester Mercury*.

HIDE AND SKIN MARKETS.

LONDON, SATURDAY, Feb. 22.

MARKET HIDES:		s. d. s. d.	KIDNEY HIDES, each		s. d. s. d.
54 to 54½lb.	0 3 00 to 0 3 24		Old skin, 11½	7 0 0	
54 to 7½lb.	0 3 00 to 0 3 24		Full	7 0 0	
7½ to 80½lb.	0 3 00 to 0 3 24		Folled sheep	7 0 0	
80 to 82½lb.	0 3 00 to 0 3 24		Half-breds	7 0 0	
82 to 84½lb.	0 3 00 to 0 3 24		Downs	7 0 0	
84 to 104½lb.	0 0 00 to 0 0 00		Abattoirs	7 0 0	
104 to 112½lb.	0 0 00 to 0 0 00		Lambs	7 0 0	

PRICES CURRENT OF GUANO, &c.

Peruvian Guano direct from the importers' stores, 212 ½s. to 212 ½s.

Bones, 28 to 28 ½s. Ditto Crushed, 28 10s. per ton.	
Animal Charcoal (70 per cent. Phosphate) 28 per ton.	
Coprolites, Cambridge, whole 28, ground 28 10s. per ton.	
Suffolk, whole 28 10s., ground 28.	
Nitrate of Soda, 212 ½s. to 212 ½s. per ton.	
Gypsum, 21 10s. Superphosphate of Lime, 25 ½s. to 25 ½s. per ton.	
Sulphuric Acid, concentrated 1 545 1d. per lb., brown 1 710 0d.	
Blood Manure, 28 ½s. to 27 10s. Dissolved Bones, 28 10s. per ton.	
Linseed Cakes, best American bri., 21 10s. to 21 10s., bag 41 to 2.	
Cotton Seed Cake, 22 10s. to 27 10s. per ton.	

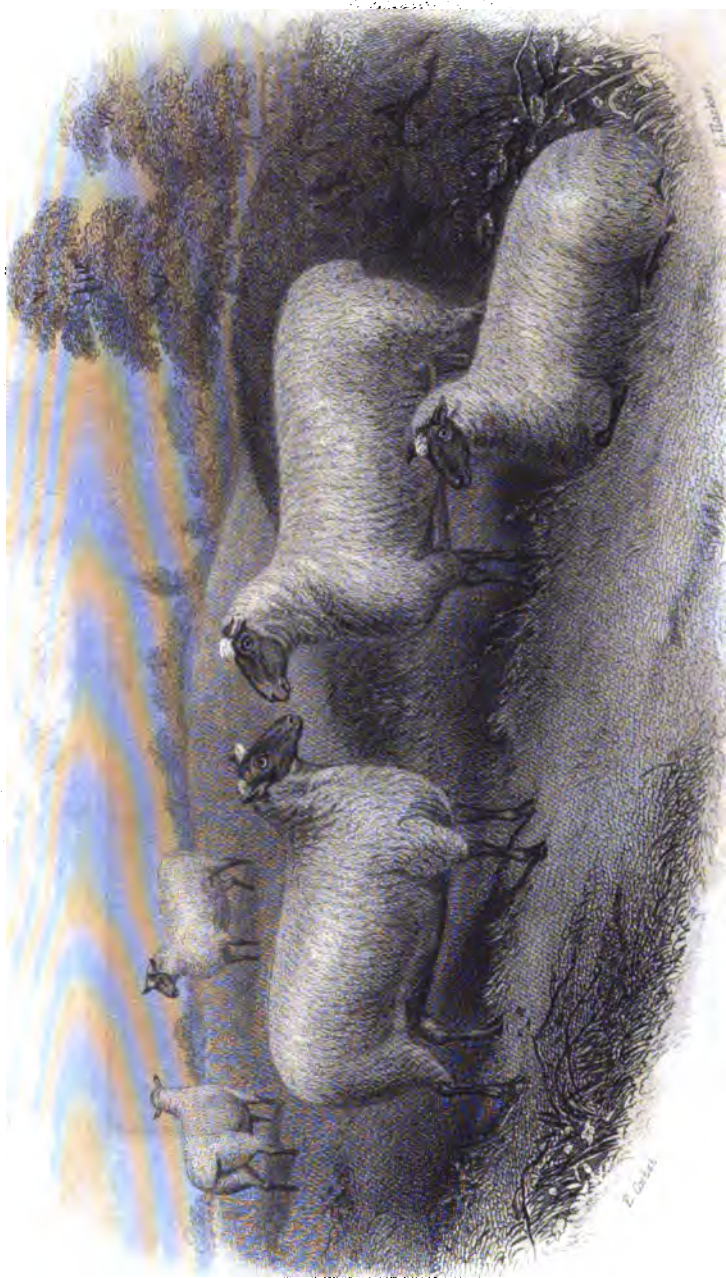
E. PURVIS, London Manure Company, 116, Fenchurch Street, E.C.

Guano, Peruvian 212 7 6 to 212 0 0	Linseed Cake, per ton—	21 10 0
Do. Upper do. 6 15 0	Amer. thin, 6 10 0 to 10 10 0	21 10 0
Bone Ash, 4 10 0	English, 11 0 0	11 10 0
Nitr. of Soda, p. c. 11 8	12 0 0	12 0 0
Linseed, Bombay, p. r. 3 6 0	3 0 0	3 0 0
Rape-seed, Guzerat 3 18 0	3 17 0	3 17 0
Clover-seed, N.A.M.	3 7 0	3 7 0
red, new per 100 lbs.	3 7 0	3 7 0

SAMUEL DOWNES AND CO., General Brokers, No. 7, The Albany, Liverpool.

Agricultural Chemical Works, Stowmarket, Suffolk	
Prentice's General Manure for Corn Crops.....	per 220 lbs. 2 0 0
Mangold Manure.....	per 220 lbs. 2 0 0
Prentice's Turf Manure.....	per 220 lbs. 2 0 0
Prentice's Superphosphate of Lime.....	per 220 lbs. 2 0 0

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Oxfordshire Downs.
The property of Mr Charles Howard of Bullingham Bedfordshire the First Prize pair at the
Great Agricultural Society of the County of England, July 1897.
London Published by permission of the Council of the Royal Society.



Everett

*Chivalry & Industry:
Or, Valour out of Industry, by G. H. M.*

London, Published by Rogers & Tait, 205, Strand, 1868.

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NEW SERIES.

VOL. LIV.

1868.

NO. CXXVII.

PLATE I. OXFORDSHIRE DOWNS.

THE PROPERTY OF MR. CHARLES HOWARD, OF BIDDENHAM, BEDFORD.

"The Oxfordshire Downs are what are commonly styled cross-bred sheep; but their patrons, in 1857, determined upon giving them a definite name. Hence their new title, the propriety of which is demurred to by some; for its only similarity to a Down is its colour, while its size and fleece partake more of the long-wool—important qualities, which have been long and carefully cultivated by the promoters of this breed. They were originally produced by crossing the Hampshire, and in some instances Southdown ewe, with a Cotswold ram—most commonly the former, for it gave increased size—and the putting the crosses together. By constant attention and weeding, a most successful result has been accomplished, producing a kind of sheep that possess, with uniformity of character and hardness of constitution, large frames, good fleeces, aptitude to fatten, and mutton of superior quality. It is about twenty-seven years since they were first established in Oxfordshire. The first Oxfordshire Down ram exhibited at our Royal shows was at Windsor in 1851, by the late Mr. John Gillett, of Brize Norton, who was a very successful breeder of them; but as no separate class is assigned them, they have but seldom competed until last year at Warwick, when there were 37 entries, thus bidding fair for a very strong competition when the Council of the Royal Agricultural Society determine to place them upon the same footing as their rivals the Shropshires. Until this is the case they will have to compete with an old-established breed—the Hampshires—a state of things alike unsatisfactory to both exhibitors and judges. They have the last few years spread most rapidly in Oxfordshire and distant counties, and a very large number of rams are annually disposed of, not only by private contract, but by auction at the Oxford cattle market, not a few finding their way into Hampshire and Shropshire. He himself had been very successful with them from the time he had commenced business; and for rent-paying properties he would not change his flock for one of any of the established breeds."

So said Mr. Charles Howard in an address he delivered at the Farmers' Club in 1860 on THE BREEDING OF SHEEP, and the plate comes well in illustration of his practice.

Mr. Howard commenced with what were then known as half-breds (the produce of Down ewes crossed by a Leicester ram) in the year 1847; and in 1849 he first tasted the sweets of success at the Smithfield Club Show, where his sheep took a second prize, beating Mr. Druce and others. In 1851 he saw the ram he refers to at the Royal meeting at Windsor, and this being just the sort of sheep he had been long looking for, he hired a ram of Mr. Gillett, and thus got a good start. Since then "Mr. Charles" has been pretty generally content with the use of his own blood, although he occasionally may take a taste from a brother-breeder. As we have seen these sheep not only on the show-ground, but in flock at Biddenham, we are enabled to speak to their remarkable uniformity—a feature not so often observable in a comparatively new breed. Their excellence, however, has been continually maintained in public; for they have taken forty prizes from the home agricultural Society in Bedfordshire, with seven premiums from the Royal Agricultural Society, seven from the Smithfield Club, and a number of commendations and high commendations. Mr. Howard also took the prizes for wool at both the Newcastle and Plymouth Meetings of the Royal Society.

Two years after the reading of the paper we have quoted from, the Royal Agricultural Society and the Smithfield Club established separate classes of Oxfordshire Downs; and Mr. Howard, who had not exhibited for some years, again prepared some sheep, with which he achieved the great object of his ambition—viz., the winning of a first prize on the first occasion of the sort being shown as a distinct breed, a feat which he accomplished at the Smithfield Club Show of that year. In 1863, at the Royal Meeting at Worcester, his entries were passed over as fairly shown, the prizes going

chiefly to animals smothered and sweltering in a two or three years' fleece, an abuse which was strongly commented upon, and that led to certain wholesome inspections and restrictions. But at the Bury St. Edmunds Meeting last summer Mr. Charles Howard held his own again, as we thus reported at the time: "The proof and pride of the Oxfordshire Downs were to be found amongst the ewes, where Mr. Charles Howard showed two pens all like as peas, and full of quality, with good mutton and good wool. If they can only go on breeding the Oxford as sorty and handsome as these Biddenham ewes, they are sure to take, and with a new breed we must always turn to the ewes for stamp and uniformity. Most men can get up a show ram or two, but it is something to match

two pens of prize ewes, and we believe we might have shifted any of these ten without doing any damage to either lot." We saw these ewes again at the Bedford Show in the autumn, when "they looked even better than they did in July."

Mr. Howard for some seasons sold his sheep by private contract; but in 1865 he commenced an annual sale, when fifty-seven rams averaged just about £12 each. In 1866 sixty-six averaged £11, and in 1867 sixty-one made £12 5s. each, while five let for the season at £11 each. There was nothing from Biddenham in the sheep way at the last Christmas shows; but Mr. Howard's brother-in-law, Mr. Rogers, of Bromham, took a prize at Birmingham with a pen bred from the neighbouring and now famous flock,

PLATE II.

CHEVALIER D'INDUSTRIE; A THOROUGH-BRED STALLION.

THE PROPERTY OF MR. W. GULLIVER, OF SWALCLIFFE, BANBURY.

Chevalier d'Industrie, bred by the late Mr. C. Greville, in 1854, is by Orlando out of Industry, by Priam, her dam Arachne, by Filho da Puta—Treasure, by Camillus—Hyacinthus—Flora, by King Fergus.

Orlando, bred by General Peel in 1841, is by Touchstone out of Vulture by Langar. Equally famous on the turf and at the stud, Orlando long ranked as the most fashionable horse of his time. Himself a winner of the Derby, he is the sire of Teddington, a winner of the Derby; of Imperieuse, a winner of the Thousand Guinea Stakes and the St. Leger; of Fazzoletto, Fitz-Roland and Diophantus, all winners of the Two Thousand; of Ariosto, Melissa, Boiardo, Zuyder Zee, Scythian, Orestes, Marsyas, Lurley, Theodora, Eurydice, Cantine, Imperatrice, Fravola, Little Lady, King of the Forest, Crater, Chevalier d'Industrie, Trumpeter, Attraction, Chattanooga, Liddington, The Knave, Cassidia, Tarragona, Niké, and other winners. Orlando is still at Hampton Court, where we saw him a season or two since, looking, for his age, wonderfully fresh and well. He is no longer advertised; but the next lot of Royal Yearlings will include three by him, two colts out of Flight and Lady Palmerston, and a filly out of Catawba. Mr. J. Johnstone has also a yearling colt by the old horse, out of Prudence by Voltigeur.

Industry, bred by the late Lord Chesterfield in 1835, won the Oaks, while at the stud she was the dam of Stitch, by Hornsea, in 1842; of Arkwright, by Don John, in 1843; of Stultz, by Hornsea, in 1844; Distaffina, by Don John, in 1845; Lady Evelyn, by Don John, in 1846; a filly by Pantaloon, in 1847, that went into Baron Rothschild's stud; of Barcelona, by Don John, in 1848; missed to Touchstone, in 1849; Exhibition, by Bay Middleton, in 1850; Paxton, by Slane, in 1851; a colt by Bay Middleton, in 1852; and of Chevalier d'Industrie, by Orlando, in 1854. The Chevalier was her last foal, as she was barren in 1853, 1855, and

1856. Industry's produce, as will be seen, included many good runners; Lady Evelyn, like her mother before her, winning the Oaks. The old mare passed into Mr. Greville's hands in 1846, in whose possession she died some ten years afterwards.

Chevalier d'Industrie is a rich chestnut horse, well set off with some of the Orlando markings, and standing sixteen hands and half-an-inch high. He has a neat head, nicely set on to a good strong neck, with beautifully laid shoulders, a capital barrel, and an extraordinary back. He has great width across the hips, famous quarters and thighs, with fine muscular arms and large tendinous legs. The Chevalier shows, in fact, great length and plenty of power on a decidedly short leg, while he has a sweet temper, very "vigorous" action, and an especially grand way of carrying himself. Mr. Corbet, our artist, considers him to be one of the finest horses ever put upon canvass, and no doubt he disputes with Lord Clifden the palm of being the handsomest thorough-bred stallion in our list. But then the Chevalier comes of handsome parentage. Few horses ever showed more style than Orlando; and we have still a keen recollection of that sweet mare Industry, as in Lord Chesterfield's smart livery she took her canter from the post for the Oaks, led by something in the same colours. My Lord and the Scotts were just then in their zenith. Tracing him back in this fashion, there is little wonder that Friponnier should be so "admirable a Crichton" either for appearance or prowess. But the Chevalier himself was by no means made to look at; for he could always run a bit, and well do we remember what a lead he had for the Ascot Cup when commissioned to cut out the running for something in that good field—of Skirmisher, Gemma di Vergy, Saunterer, Polestar, Pretty Boy, Winkfield, Leamington, Rogerthorpe, Warlock, and others.

At the sale of Mr. Greville's yearlings in 1855, Chevalier d'Industrie was knocked down to Mr.

Padwick for 255 gs., the second-best price of the lot. Old John Day was just then retiring from public, and the chesnut cob received his education at the hands of Goater at Findon.

Chevalier d'Industrie was at Theobald's Stud Farm, Enfield, in 1859, and at Mr. Mitchell's, near Worthing, in 1860, 1861, and 1862. By the next season he had been purchased by Messrs. Painter, and was of course located at Stafford, where he continued until the autumn of 1866, when at the break up of the Dean's Hill Stud he was knocked down at the hammer to Mr. Gulliver for 500 gs.; so that this is the Chevalier's second season at Swalcliffe. His stock came out in 1862, when he showed two winners in Cadeau and Oakapple; in 1863 Antoinette was a repeated winner at Newmarket and elsewhere, and Corset and Narbonne were also booked to his credit up to the close of 1865, when the Chevalier showed five winners out of eight starters. Since then Chevalier d'Esprit, Algar, Atrous, Correction, Miss Osborne, Pope, and Friponnier have all been winners, and last season there were half-a-dozen to the good. The trump card of these is of course Friponnier, who has already won six-and-twenty times, and beaten in turn the winners of the Derby and the St. Leger in

1866, and the winners of the Derby and Oaks in 1867; thus going far to prove himself the best horse of his day, or at least of his year. Chevalier d'Industrie's subscription is put at thirty mares at 25 gs. each, beyond a few from Mr. Gulliver's own stud; while from the horse's fine appearance offers have been made to pay the full fee for half-bred mares, but these have been declined.

Amongst the Swalcliffe yearlings coming up this summer will be a chesnut colt by Chevalier d'Industrie out of No-Name by Marsyas, that bears a striking likeness to Friponnier, and has a further resemblance to him in his pedigree, with a double cross of Orlando. Mr. Gulliver's young things are all very forward and remarkably fine grown, as well as being very hardy-looking and good goers, for in place of bottling them up in boxes they are allowed plenty of room to try their paces. They comprise four Big Bens, the last of this horse's get, and a capital sample of his stock; five Nevilles, one Canary, and one Chevalier.

With Lady Elizabeth by Trumpeter, Viridia by Marsyas, and Friponnier by Chevalier d'Industrie, all grand-children of Orlando, we must certainly be allowed to have taken the most fashionable strain of blood in our illustration of a stallion for the season.

THE ADVANTAGES OF IRRIGATION.

BY CUTHBERT W. JOHNSON, F.R.S.

The importance of irrigation with impure waters has more than once been advocated in this Magazine. We must ever bear in mind that the great results obtained by watering the grasses in this manner are not confined to their enormously increased growth, but while the crop is multiplied the water is rendered pure. Not only is our supply of food enlarged; but our comfort, our health is preserved: our streams being saved from pollution are rendered more wholesome for our live stock. Any researches, therefore, which increase our knowledge of this now rapidly extending employment of such impure waters cannot be too extensively known.

Some recent observations made on the sewage-watered meads of Croydon are well worthy the attention of our readers. The results thus carefully obtained have been well described in a recent address to the Society of Civil Engineers, by Mr. Baldwin Latham, the president of the society. This gentleman has long had all the great sanitary works of Croydon under his care. In that address he thus sketches the origin of those noble efforts which are now saving the lives of so many of our countrymen:—

"History tells us that in remote periods works of drainage and water supply were considered necessary whenever men congregated together in large masses, hence we find that the oldest cities of the world were sewered and well-supplied with water. But then came a period in history when the benefit of sewers and abundant supplies of pure water appear to have been forgotten, or at least ignored; when sanitary science, like many other branches of science,

descended to the very lowest ebb, only to be revived in its true spirit within the memory of living man. In our own country, the evils arising from retaining decaying animal and vegetable substances in the vicinity of our dwellings, and in some cases in our habitations, was patent to the early sanitary reformers. Year after year the fearful scourge of epidemic and endemic diseases, and the clear and unmistakable warnings of the cause, compelled Parliament to pass that measure known as the Public Health Act, 1848, the aim and object of which were, to maintain and improve the state of the public health of the country. No sooner was the measure passed, than a large number of towns took advantage of it; and there are now about 650 towns and districts in this country that are governed in their various sanitary operations by that Act and its subsequent amendments. The sanitary laws of the country are intended to promote the adoption of such measures as are calculated to secure the health of its citizens. Pure air and water must be considered absolute necessities, if life and health are to be maintained. The crowding together of masses in the cities, towns, and villages of our country naturally leads to the production of much offensive matter, which, if retained in the midst of our populations, will vitiate the atmosphere and poison the water supply; and the human body, robbed of its life-giving elements, is poisoned by the emanations of its own creation, and soon becomes the victim of disease and death. The modern works of sewerage and water supply have been experiments made for the purpose of improving the state of the public health, and

that they have accomplished the end for which they were inaugurated will be seen by the following table, containing the results in twelve towns:—

Name of Place.	Population in 1861.	Average mortality per 1000 before construction of works.	Average mortality per 1000 since completion of works.
Banbury	10338	23.4	20.5
Cardiff	32954	33.2	22.6
Croydon	30229	23.7	18.6
Dover	23108	22.6	20.9
Ely	7847	23.9	20.5
Leicester	68056	26.4	25.2
Macclesfield	27475	29.8	23.7
Marthyr	52778	33.2	26.2
Newport	24756	31.8	21.6
Rugby	7818	19.1	18.6
Salisbury	9030	27.5	21.9
Warwick	10570	22.7	21.0

We farther learn that in these towns after sanitary measures were adopted that the saving of life and the reduction in the amount of phthisis and typhoid fever, in the whole population, is per cent. as follows:—

Name of Place.	Saving of life per cent.	Reduction of typhoid rate per cent.	Reduction in fever rate of phthisis per cent.
Banbury	12½	48	41
Cardiff	32	40	17
Croydon	22	63	17
Dover	7	36	20
Ely	14	56	47
Leicester	4½	48	32
Macclesfield	20	48	31
Marthyr	18	60	11
Newport	32	36	32
Rugby	2½	10	43
Salisbury	20	75	49
Warwick	7½	52	19

We cannot fail on the score of humanity to rejoice at the harvest accomplished by these great these most successful sanitary efforts. But there are other points of view from which we can congratulate ourselves. First, we may note how this saving of life is a saving to our pockets, how it keeps our money from being needlessly abstracted; and secondly, to our agricultural readers it will demonstrate that when the improvers of the public health are rendering the water of our streams more pure, they not only thus promote the health of our live stock, but by the purifying of our sewage matters on our meadows, they very largely increase the supply of their food. It is thus that Mr. Latham works out some of these most important calculations:—

"It will be seen that the sanitary works which have been carried out in the towns to which I refer have had a marked effect in staying the ravages of disease and death, and of prolonging the average duration of life. By reference to the last column we see that a great reduction has been made in the number of deaths from even that painful and lingering disease that is so fatal in our country; which is an unlooked for success, and is probably due to the drying of the soil by works of sewerage. How much society loses annually by preventible diseases it is impossible to fully estimate, as health is so intimately connected with all the branches of every-day life. We know full well that the power of physical ability forms the basis of all descriptions of labour, and that the full value of work cannot be got from a sickly, and therefore feeble, population; therefore those communities that are in bad sanitary condition are thus considerable losers. The national prosperity of the country is impeded by the

undue amount of sickness we have to support, and the losses of human life we have to sustain. If upon no other than economic grounds, it is true economy to spend some little of our earnings in the prosecution of sanitary works. An estimate of the probable result of the value of sanitary works can be propounded in this way: First, the saving in the cost of funerals, inclusive of mourning and fees, which may safely be set down at £5 each. Second, the saving by reason of the escape from sickness, with its cost, and the value of lost labour; and it may safely be taken that, for every life saved by sanitary works, twenty-five persons escape sickness, and that £1 per case would represent a moderate value of the result. Third, the value of the labour saved to the country by prevention of premature death. For every adult female 5s. per week, and for every adult male 10s. per week, or a mean of 7s. 6d. per week, may be taken as the value of the labour over and above the cost of maintenance. Taking a town in this way, and comparing the result with the expenditure that has been incurred in providing the means by which these results have been obtained, we shall see at a glance the result of sanitary operations. We will take, for the sake of example, the town of Croydon, in connexion with which many of you are aware I have laboured for some years:—

EXPENDITURE IN CROYDON.

Purchase of freehold lands.....	£250,000
Construction of waterworks	70,000
Construction of sewers, sewage irrigation works, public baths, abattoirs, and general improvements	73,000
	<u>£193,000</u>

"The average mortality of the town of Croydon for seven years previous to the construction of sanitary works was 23.66 per thousand; and for thirteen years since they have been in operation it has been 18.64 per thousand, showing a saving of 5.02 per thousand per annum. The mortality in the year 1848 was 28.16 per thousand, and in the year 1867, 16.6 per thousand; in 1848 the population was 19,880, in 1867 it was 50,750, showing that the population increased 160 per cent., and the death rate reduced 40 per cent. between the extreme periods. The mean population for thirteen years since the works have been completed and in successful operation, commencing with the year 1855, has been 37,375. By taking the mean saving of life of 5.02 per thousand, and multiplying it by the mean population in thousands, and again by the number of years, we get 37,375 by 5.02 by 13, equal to 2,439 lives saved. Of this number six-tenths, or 1,463, would be adults, or persons above the age of 20 years, and probably one-tenth would be infirm from age: by making this deduction, we have still 1,317 lives, in the full vigour of life, saved. By using the figures before quoted in connexion with the lives saved, we shall get the money value of the benefits conferred by the works:—

2,439 funerals, &c., saved, at £5 each.....	£12,195
2,439 by 25 equal to 60,795 cases of sickness prevented, at £1.....	60,795
1,317 value of labour, at £19 10s. for 6½ years...	166,528
	<u>£239,518</u>

"These figures show that in Croydon, in the short space of thirteen years, a sum exceeding by 25 per cent. the total expenditure for all purposes has resulted from the prosecution of the sanitary works. Although it has been here attempted to put a money value on life, we feel individually that life is priceless, and that we may look to the 2,439 persons saved from the jaws of death in this town alone as the living testimonies of the great value of sanitary works.

"It cannot but be seen that the case has been under-

stated. The averages do not give the full saving, when the population increases rapidly, and the scale of mortality as rapidly declines; and, moreover, it should be considered what would have been the probable increase in the death rate if the original state of affairs had been allowed to continue to the present period; for an examination of the mortality tables, prior to the existence of sanitary works and the efforts of sanitary labour, shows a gradual increase. With all the benefits that have been conferred by the prosecution of sanitary works, it cannot be overlooked that the first efforts of our sanitary reformers have been marred by reason of the state of pollution of the water-courses and rivers of the country. The growing evil of the system has found a remedy in the application of the liquid sewage to land; and, by a natural process, those foul streams that taint our rivers and water supplies may be turned from a course of destruction into a channel that will add to the material wealth of the nation. The results of sewage irrigation, as it is termed, are marvellous. Large and luxuriant crops are produced, while the foul streams are converted into comparatively pure water. The following analyses will show the result: they are by Dr. Odling, a result of samples taken every quarter of an hour for 24 hours on the 23rd and 24th of November last. The sewage at the time was flowing over 30 acres of land, on which it had been continuously flowing for about two days; the volume of sewage passed on to the area in the 24 hours was 3,274,300 gallons, and the effluent water, flowing off after purification, was 2,245,200; so that 31½ per cent. of the whole volume was lost by evaporation and absorption. As the land was completely saturated prior to the experiments, it may fairly be taken that 15.75 per cent., or one-half the entire loss, is due to evaporation through the plant and from the water surface. This would tend to condense any impurities that remain in the effluent water in the proportion of the reduction of volume. In the analyses given, the result that would be obtained by condensing the water supply is shown in the third column:—

	Water supply of Croydon. Average of the wells, Nov. '07. Analysis by Dr. Odling.	Sewage of Croydon after purification by irrigation, Nov., 1887. Analysis by Dr. Odling.	Water supply of Croydon condensed to some extent as sewage.
	Grains per gallon.	Grains per gallon.	Grains per gallon.
Total solid residue	21.777	26.180	25.233
Mineral matter	21.409	25.025	24.807
Volatile matter .....	.368	1.155	.426
Chloride of sodium.....	1.454	3.400	1.684
Ammonia.....	.032	.042	.037
Nitrogen as ammonia...	.026	.032	.030
Nitrogen as oxides .....	.243	.419	.281
Nitrogen as organic matter .....	.002	.144	.0033

"A comparison between the second and third columns will show how nearly the sewage has returned to the state of the pure water as supplied to the town. It may be observed, that the total amount of organic and volatile matter contained in the effluent water after passing over the land is less than the average amount contained in the water supplied by and one of the existing London Water Companies; and, therefore, it may safely be laid down that sewage after such purification is fit to be turned into any fresh water-course. It may be remarked that the analysis of the sewage was made at a period of the year very unfavourable to the system. We must all have seen

that, as the process of applying sewage to land has become successful in effecting the purification, doubts have arisen as to the probable effect of spreading large volumes of it over areas in the immediate vicinity of populous places. The result of the application of sewage to land, in a sanitary point of view, is equally assuring; for we find, upon examination, that Norwood, which has its irrigation area close to an inhabited district, during the three years the sewage has been applied to the land, has had a mortality of 18.17 per thousand in 1865, 15.13 in 1866, and 14.21 in 1867; while the same area, but inclusive of more distant localities, has had, during the same period, the respective mortalities of 21.26, 20.04, and 16.60; so it appears that, in the rapid growth of the plant, the assimilation of nitrogenous and carbonaceous matter, and the elimination of large volumes of oxygen by the plant, we have the antidote for what otherwise might prove baneful in its effects."

The amount of moisture evaporated by the grasses in well-irrigated soils is, we find, much more considerable than under ordinary circumstances. The evaporation from a soil free from plants is very great; but not nearly so much so as when the land is well tenanted with growing plants. The amount of water thus lost varies with the nature of the soil; but, of course, the difference is not so great when the soils are all kept constantly, as by irrigation, in a very moist state. The comparative evaporation of a variety of soils under the same circumstances was long since ascertained by Professor Schubler (*Jour. Roy. Ag. Soc.* vol. i. p.191). In the following table column I. gives the soil; II. the amount of evaporation at 65°, in four hours, from 100 parts of absorbed water; III. the time in hours and minutes required to evaporate, at 65°, 90 parts of water from 100 parts absorbed:

	I.	II.	III.
Siliceous sand...	...	88.4	4.4
Calcareous sand	75.9	4.44
Slaty marl	68.0	5.33
Sandy clay	52.0	6.55
Loamy clay	45.7	7.52
Stiff clay or brick earth	34.9	10.19
Pure grey clay	31.9	11.17
Fine lime	28.0	12.51
Garden mould	24.3	14.49
Arable soil	32.0	11.16

In the case of meads, perhaps, densely covered with a luxuriant and rank crop of grass, the evaporating surface is very materially increased, and the demand upon the soil for moisture is pretty certainly proportionately enlarged. The larger evaporation from a soil tenanted by plants was shown experimentally by Mr. Geo. Phillips (*Jour. Roy. Ag. Soc.*, vol. vii., p. 307). He employed in the month of March two metallic vessels of equal size, which were used as mould pots. They were so constructed, that no moisture could escape except at the surface. Each pot contained 22.09 square inches of surface at the level of the mould. One pot was filled with mould only, the other with mould containing a polyanthus, and, in another experiment, three plants of the potato. In twelve days the mould evaporated 1,600 grains, or 6.06 grains daily per square inch, while the pot containing the polyanthus had evaporated 5,250 grains, which for the mould and one surface of the leaves is 4.93 grains for every square inch. In the case of the potato plants, in nineteen days the mould evaporated 54,000 grains; the potato plants, 3,000 grains. The daily evaporation from one surface of the potato was at the rate of 1.4 grains, and of the polyanthus 2.1 grains, from one square inch. In the experiments of Dr. Hales on a sunflower, the daily mean evaporation was 15 grains for every square inch of the plant's surface.

For some curious observations on the influence of light

upon the amount of water exhaled by plants we are indebted to Professor Macaire, of Geneva (*Trans. Roy. Ag. Soc.*, 1848, p. 270). His observations confirm the generally received opinion that the exhalation is chiefly from the leaves. He found that the exhalation was much less in quantity during the night than during the day—that the influence of light upon the amount of exhalation was considerable, and that this varied considerably, according to the surface of the leaf exposed and the rays of the spectrum in which it was placed. For instance, in two hours, a leaf of a raspberry bush, weighing 28 grains, placed in 300 grains of water, with its *under-surface* exposed to the light, in a temperature of 68 deg. exhaled :

In diffused light	4.3 grains of water.
In the blue rays	6.3 "
In the yellow rays.....	2 "
In the green rays	2 "
In the red rays	1 "
In the dark	0.4 "

Under similar circumstances, with its *upper-surface* exposed to light, it exhaled :

In diffused light	3.2 grains of water.
Under blue glass	3.8 "
Under yellow glass	0.5 "
Under red glass.....	0.4 "
In the dark	0.0 "

In all the experiments, the exhalation was greater in the blue rays than in the others, whether it was the upper or the under surface of the leaf that was exposed to the influence of light. The blue rays excite a greater exhalation than the diffused light; but this light has more influence than the other rays. The red is that in which the exhalation is the smallest.

If the utilitarian asks of what service are all these researches to the agriculturist, let him ponder over the following facts. These results, let him remember, were obtained after the many laborious inquiries of her Majesty's Commissioners, who were appointed to inquire into the best disposition of the sewage of towns. The Commissioners found that the quantity of ordinary meadow grass grown per acre at Rugby, being the average of three years, was :

Non-sewaged.	Sewaged at the rate of 3,000 tons per acre.	Sewaged at the rate of 6,000 tons per acre.
Tns. cwt. qr. lb.	Tns. cwt. qr. lb.	Tns. cwt. qr. lb.
Grass..... 9 6 0 24 ...	22 5 2 7 ...	30 6 2 6
Hay 3 0 3 4 ...	5 1 3 5 ...	5 15 1 23

Sewaged at the rate of 9,000 tons per acre.

Tns. cwt. qr. lb.
Grass 32 12 0 15
Hay..... 6 9 1 24

The quantity of Italian rye-grass grown on the well-sewaged fields at South Norwood during the year 1867 was over 50 tons to the acre; under ordinary circum-

stances 40 tons to the acre may be reckoned upon; and as at Croydon this grass is worth 17s. to 20s. per ton on the farm, the value of an acre of produce may be estimated at from £30 to £40. As to the quality of sewage grass, the Royal Commission have arrived at the following simple conclusion, after a great number of experiments: "That in both milk and increase, but especially milk, a given weight of animal was more productive when fed on unsewaged than sewage grass, and that a given weight of fresh unsewaged grass was more productive than an equal weight of fresh sewage grass; but that a given weight of dry or solid substance supplied in sewage grass was more productive than an equal weight supplied unsewaged." Hence it would follow that hay made from sewage grass has much better feeding and milk-producing qualities than hay made from unsewaged grass.

On the South Norwood Meads (which are on the London Basin clay) the following is the length in inches of the six crops of Italian rye-grass grown in these fields in the year 1867 :

1st crop	35
2nd do.	40
3rd do.	42
4th do.	39
5th do.	24
6th do.	14

187 in., or 15ft. 7 in.

In some lately reported experiments, carried on in 1867 by Mr. J. C. Morton on the farm of the Metropolis Sewage Company at Barking, some equally important results were obtained (*Bath and West of England Soc. Journal*, 1868).

In one of these great operations, to 56 acres of Italian rye-grass about 300,000 tons of sewage were applied. From these 56 acres 2,488 tons of grass were cut.

The observations of Mr. Morton lead him however to anticipate a far greater produce of grass from a given weight of sewage than that which he has hitherto obtained; he expects (to give his own words) "that we shall be able, by the reasonable use of sewage on the land, to produce a ton of Italian rye-grass over and above the natural and unassisted growth of the land for every 100 tons of sewage applied."

I rejoice that the great operations of the London Sewage Company are now directed by so able a manager as Mr. Morton, and that the little band who have for more than a quarter of a century laboured to promote both sanitary improvements and sewage irrigation have thus received so important an addition to their ranks.

From whatever point therefore we view this great question, we can hardly fail to be impressed with its importance. Here too, let me repeat, the philanthropist and the agriculturist walk hand-in-hand; and by their united effort, with God's blessing, long may they diffuse increasing health and fertility over our island.

THE AGRICULTURAL STATISTICS OF 1867.

Despite the opposition still manifested in some quarters, or perhaps rather by some persons, the effort on the part of the Government to collect the reliable statistics of Agriculture is becoming gradually successful. At the meeting of the Statistical Society Mr. Valpy, a gentleman connected with this department of the Board of Trade, declared that not more than ten per cent. of the applications for the acreage in crop of 1867 had been refused by the farmers of Great Britain, while in Ireland the returns are considered to be yet

more complete. We have the same authority for stating that as the machinery gets more into working order it is expected that the substance of the information thus obtained may be published at a much earlier period, and thus be of proportionately greater value both to the producer and consumer.

And this quasi-official explanation came very much to the point, for it was made on the occasion of Mr. James Caird delivering an address, to which he has since given the somewhat fanciful title of OUR DAULT

Food. The paper, however, was in point of fact a very able and suggestive essay on Agricultural Statistics, culminating in a seasonable deduction on the harvest of 1867 and the prospects for 1868. The ground-work here rested mainly on the returns obtained by the Board of Trade; but the lecturer was no novice, and some twenty years' continual experience and close observation had enabled him to illustrate our present position by a number of comparative tables and other well-arranged data, which served to show some curious results in the way of cycles, good and bad years, high and low prices, and so forth. A run of bountiful harvests, for instance, has pretty generally occurred under a Whig Government, and the late Lord Palmerston was especially noticeable for his happy "influence" over the seasons. Of course, the more logical conclusion would be traced the other way, and a Ministry promise to stay in the longer the more abundantly it might be enabled to provide food for the people.

We give Mr. Caird's paper in full in another place, so that the practical man will have the earliest opportunity of passing his opinion upon its actual value. But knowing *The Times* Commissioner's precedents and peculiar tendencies, we confess that we were disappointed with the appearance of his audience. Although the room was crowded, the practical element was only conspicuous by its absence. There was a number of long-headed gentlemen, who knew everything about figures and nothing about farming, and who would most probably take Mr. Caird's views just as he put them, and proceed to argue from them accordingly. And so it certainly happened in the outset. It has been said that anything may or may not be proved by the use of figures; and the Secretary of the Society, who was the first to follow on the opening speech, went far to prove the correctness of this somewhat cynical assumption. By the help of a mass of figures this learned gentleman showed that it cost more to keep a pauper in the work-house than any other person in the country; that more barley would be grown and better beer brewed with the Malt-tax than without it; as he went on to talk a deal of astounding nonsense of a similar kind, that an unprepared audience might be alike unable at the moment either to believe or to contradict. But the Secretary soon found his match amongst his fellows, and his sophistries were straightway dispelled; whilst luckily, the House of Commons breaking up early, a sonder tone was imparted to the debate. Mr. Sewell Read and Mr. Jasper More came in during Mr. Caird's reading, and by the aid of the tables hung round the room they were readily enabled to gather the leading features of the lecture. Mr. Read's speech went at once to supply the hiatus which would have been otherwise observable, as no other man speaks so much with the voice of the farmers; and it is significant that he goes thoroughly with Mr. Caird and Mr. Valpy on the mutual advantage of Agricultural Statistics being made available. He insisted, however, that such returns, to be of any service to the farmer, should be published at an earlier period; and he referred, amidst derisive laughter, to the over-coloured estimates of certain writers in *The Times* immediately after last harvest, and to the temporary effect that these gross mistakes actually had on the price of wheat. Their victim was of course the cottager or the needy man, who must thrash and sell as soon as his corn be in; whereas the market more than recovered its tone for those who could afford to wait.

Mr. Caird now puts the average growth of wheat per acre in this country at three quarters and a-half—an estimate which he believes to be fairly correct, and with which the opinion of Mr. Read also coincides. Still, at the Broad Hinton sale on the following day some of the Wiltshire farmers considered this to be too high, although

taken on the whole we are inclined to consider Mr. Caird's facts and figures on the growth of wheat as very reliable. His average annual supplies of beef and mutton, on the contrary, were strongly disputed by both Mr. Sewell Read and Mr. Dudley Baxter, as there is no doubt but that he puts the home produce at much too low and the foreign at proportionately too high a value. Mr. Caird admitted, moreover, that his figures were "arbitrary," and he declined to enter into any explanation as to how he had arrived at these, although he now adds some particulars in a short note. When we come to remember what a very important matter the home and foreign cattle trade is at this moment, with a battle being fought over the question before a Committee of the House of Commons, it becomes the more essential that any such mistake over the relative proportions of the two markets should be at once put right, or it may be made a formidable weapon in the hands of the Opposition.

We have purposely refrained, so far, from quoting from Mr. Caird; but the application of his argument comes to a focus in this wise: "Thus far, therefore, the imports would appear to have exceeded our requirements. And if my computations are well founded, the balance required during the six months till next harvest is only 4,000,000 quarters. This is a monthly rate of 660,000 quarters, or nearly one-third less than the rate at which, during the last six months, the high prices ruling have brought us foreign corn. In the corresponding six months of last year our foreign imports exceeded 700,000 quarters monthly, when the price of the preceding six months was 10s. less than at present. I think, therefore, that no apprehension need be felt as to adequate supplies till next harvest, and I can arrive at no other conclusion than that the present range of price is higher than is likely to be maintained." The tendency of Mr. Caird's education as an agricultural authority has been to make him something of an optimist, and it is by ever bearing his early inclinations in mind that we shall come to read him aright.

CROWS.—SIR, I have no wish to enter into the crow controversy, but with your permission I will simply state my experience. Some years since, when sowing oats, the operation was accompanied by a large number of crows, which I thought were devouring the seed. I went home for my gun and shot one, which I opened, and found in the stomach seventeen large grubs, five wireworms, and three or four grains of oats. This led me to examine the crop of other birds. In a magpie I found a number of black "clocks" and insects of various kinds; in a starling (of which we have large flocks here) I found a large number of small shell-snails, worms, &c., and nothing in the shape of grain; but in a wood-pigeon I found nothing but roots and grain.—I am, &c., G. R., County Cork. P.S.—I believe if man did not interfere in one way he need not do so in another—that is, if there were no game-preserving and destruction of magpies, hawks, weasels, &c., Nature would regulate the rest on the principle of supply and demand. Many of your readers may not be aware that the productive powers of crows and sparrows largely depend on the supply of grubs and caterpillars.

DISEASES OF SHEEP.—The results of my experience: For the worm in the head: turn into their nostrils a few drops of spirits of turpentine, hold up their noses a few minutes, and repeat daily until cured. For the stretches: give yarrow tea or physic. For the scours: give sulphur. These remedies are a sure cure wherever I have known them used.—HORATIO HOLMES, *Stafford Springs, Connecticut.*

**TABLE SHOWING WHAT THE YIELD OF THE CROPS OF
HAD BEEN AN**

COUNTIES.	WHEAT.			BARLEY.		
	Acres grown in 1867.	10 years' average ending 1861, in bushels.	Average Gross Yield in Bushels.	Acres grown in 1867.	10 years' average, ending 1861, in Bushels.	Average Gross Yield in Bushels.
BEDFORD	50,198	28½	1,430,643	30,453	35½	1,081,081
BERKS	60,953	33½	2,041,925	38,016	41½	1,587,168
BUCKINGHAM	55,130	28½	1,571,205	30,376	37½	1,146,694
CAMBRIDGE	131,853	32½	4,252,259	55,436	41	2,272,876
CHESTER	38,010	29	1,102,290	5,800	34½	200,100
CORNWALL	48,443	23½	1,150,521	46,056	31½	1,462,278
CUMBERLAND	22,856	29	662,824	11,511	37½	434,540
DERBY	28,166	29	816,814	15,488	40½	627,264
DEVON	113,317	22½	2,521,803	78,191	31½	2,482,563
DORSET	43,813	29½	1,303,436	37,505	38	1,425,190
DURHAM	40,099	25½	1,012,500	12,900	33	425,700
ESSEX	179,920	31	5,577,520	106,725	40	4,269,000
GLOUCESTER	90,015	27½	2,475,412	40,828	34½	1,406,566
HANTS	113,286	27½	3,143,686	69,893	36½	2,551,094
HEREFORD	59,274	25½	1,496,668	21,581	32	690,592
HERTFORD	59,421	28	1,663,788	45,250	35½	1,606,375
HUNTINGDON	46,987	29	1,362,623	21,729	40½	874,592
KENT	105,598	33	3,484,734	40,477	40½	1,639,318
LANCASTER	33,890	34½	460,732	8,278	39	322,842
LEICESTER	43,416	29½	1,291,626	31,941	37½	1,205,772
LINCOLN	273,379	31	8,474,740	148,224	39½	5,854,848
MIDDLESEX	9,518	30	285,540	2,191	37½	82,162
MONMOUTH	19,821	29	574,809	12,488	37½	471,422
NORFOLK	195,253	33½	6,540,975	191,283	42½	8,177,348
NORTHAMPTON	75,192	32½	2,443,740	53,001	44	2,332,044
NORTHUMBERLAND	38,357	26	997,282	28,743	35½	1,027,563
NOTTINGHAM	67,765	29½	2,016,008	49,932	41½	2,084,661
OXFORD	59,146	31	1,833,526	52,069	39½	2,056,725
RUTLAND	9,519	33	314,127	10,215	43½	441,799
SALOP	82,483	24½	2,041,453	52,759	29	1,530,011
SOMERSET	72,009	29	2,088,261	33,892	36	1,220,112
STAFFORD	53,940	28½	1,537,290	31,813	35½	1,119,439
SUFFOLK	148,371	28½	4,265,666	137,584	36½	4,884,232
SURREY	42,735	27	1,153,845	18,689	35½	668,131
SUSSEX	102,618	29½	3,052,885	25,478	41½	1,063,706
WARWICK	73,971	30	2,219,130	27,338	39½	1,079,851
WESTMORELAND	1,889	28½	54,808	2,932	37	108,484
WILTS	98,985	28½	2,845,818	64,810	36½	2,365,565
WORCESTER	67,747	29½	1,981,600	19,639	39½	770,531
YORK	282,682	29½	8,339,119	181,324	39½	7,162,298
Total, 1867	3,140,025		92,582,640	1,392,338		72,214,836
„ 1866	3,126,431		—	1,877,387		—

Total Quarters grown in 1867.—Wheat, 11,572,830;

1867 WOULD HAVE BEEN IN ENGLAND IF THE YIELD AVERAGE ONE.

OATS.			BEANS.			PEAS.		
Acres grown in 1867.	10 years' average, ending 1861, in Bushels.	Average Gross Yield in Bushels.	Acres grown in 1867.	10 years' average, ending 1861, in Bushels.	Average Gross Yield in Bushels.	Acres grown in 1867.	10 years' average, ending 1861, in Bushels.	Average Gross Yield in Bushels.
9,721	47½	464,177	18,446	32½	594,884	5,591	29½	163,537
24,960	56	1,397,760	13,693	36	492,948	6,045	33½	202,507
23,090	48½	1,119,865	18,079	30	542,370	6,547	29½	193,136
38,662	59½	2,300,389	27,417	31	849,927	9,539	30½	288,555
43,276	41½	1,806,773	7,211	37½	268,610	885	30	26,550
43,616	37½	1,646,504	15	30	450	52	30	1,560
72,046	46½	3,350,139	244	32½	7,980	436	30	13,080
31,290	48	1,501,920	2,198	35	76,930	2,602	30½	78,710
87,601	37	3,241,237	1,056	30	31,680	1,042	30	31,262
21,267	45	957,015	2,831	28½	81,391	2,615	29	75,835
43,706	41	1,791,946	3,871	32	123,872	3,139	23	72,197
43,198	51	2,203,098	43,213	32½	1,393,619	24,846	29½	732,957
14,895	40½	606,970	16,796	33	554,268	8,062	31	249,922
66,061	47½	3,138,847	6,094	30½	185,867	8,542	31	264,802
10,937	31½	341,781	7,022	33	231,726	6,476	27½	178,090
25,313	44½	1,120,100	8,913	31½	280,759	6,535	30	196,050
10,376	54½	562,898	14,696	31	462,924	5,912	31½	184,760
54,167	53	2,870,851	23,650	29½	703,587	19,447	29	563,963
53,557	40	2,142,280	5,754	37½	215,775	288	30	8,640
20,791	47	977,177	11,870	35	415,450	6,952	33½	232,892
111,287	54½	6,065,141	33,348	32½	1,092,147	24,620	30	738,600
5,527	57½	316,421	1,321	34½	45,904	1,373	32	43,936
8,297	46½	355,810	409	32½	13,292	1,405	30	42,150
32,503	55½	1,803,916	14,282	34	485,588	14,260	32½	463,450
17,183	53½	923,585	24,920	35½	884,660	10,418	34½	362,025
69,797	40½	2,844,227	5,751	28½	162,466	4,202	25½	106,100
18,960	52	986,960	12,923	36½	471,689	9,431	34½	323,012
22,862	49½	1,187,385	17,071	35	597,485	8,591	32½	279,207
3,416	53	181,048	1,934	37	71,553	1,377	35½	48,539
23,407	31½	737,320	3,814	27	102,978	8,166	23	187,818
24,021	44	1,056,924	14,568	32½	477,102	2,509	28½	72,133
30,793	40	1,231,721	4,264	35½	151,372	6,059	36½	222,668
16,400	47	770,800	36,287	31	1,124,897	24,983	30½	768,226
26,004	42½	1,092,168	3,239	29½	95,550	6,522	30½	198,921
66,823	51	3,407,973	8,393	31	260,183	13,302	29	355,758
13,606	49	666,694	23,136	34	786,624	11,548	31	357,988
16,977	34½	589,950	68	30	2,040	17	20	340
32,242	47½	1,523,434	12,677	31½	399,825	7,376	32	236,032
6,526	44½	288,775	18,770	29½	558,407	8,619	29½	256,414
221,160	51	11,279,160	35,295	27½	970,612	22,078	28	618,184
1,506,361		70,831,138	505,539		16,268,846	312,409		9,470,496
1,503,990		—	492,586		—	314,206		—

Barley, 9,026,854½; Oats, 8,853,892½; Beans, 2,033,605½; Peas, 1,183,812.

A PAPER READ BY MR. JAMES CAIRD AT THE STATISTICAL SOCIETY, ON TUESDAY, MARCH 17TH:

principal kinds. The wheat is nearly the same in both—3,840,000 in the Returns, and 3,750,000 in the estimate. In barley there is an immense discrepancy, especially as regards England, where two million acres are returned, and one million estimated. For Scotland and Ireland the error is the other way, 388,000 acres being returned, and 750,000 estimated. In oats the discrepancy is about one million acres, much of which can be accounted for by the ascertained diminution which has taken place since 1858, the date of the estimate. And, in regard to barley, there cannot be a doubt that a great increase since that time has been made to the acreage, but the gradually rising proportion which of late years the price of barley has borne to wheat. I cannot leave this part of the subject without recording my admiration of the general accuracy of Mr. McCulloch's estimate of the total acreage of corn—viz., 11,470,000, as compared with 11,450,000 shown by the Returns. Nothing like the same accuracy is to be found in some of the estimates of live stock. In 1836, the number of cattle in the United Kingdom was estimated by one writer, quoted by a leading agricultural authority, at 15,400,000. The actual numbers now are found to be 8,700,000. The sheep in Great Britain were estimated at forty-eight millions: the actual numbers are twenty-eight millions. The pigs were estimated at eighteen millions: the actual numbers are four. In number and value that great branch of our national property, the live stock, seems thus to have been estimated at 100 per cent. more than really existed! The changes that have taken place in Scotland and Ireland during the last ten years are shown in the Returns, and are very considerable, the acreage of wheat having dropped one-half in that period. The loss of wheat in Scotland has been recovered by a nearly equal increase in barley and oats; but in Ireland there has been a loss also in each of these crops of about a sixth. It is nearly compensated by a gain, during the same period, of 120,000 cattle, one million sheep, and 278,000 pigs. The most striking change recorded is seen by the Irish returns—conducted so ably for more than twenty years by the Registrar-General, Mr. Donnelly—which show in the following figures the production of corn and potatoes:

	Corn.	Potatoes.
1836	1,000,000	1,000,000
1846	1,000,000	1,000,000
1856	1,000,000	1,000,000
1866	1,000,000	1,000,000
1876	1,000,000	1,000,000
1886	1,000,000	1,000,000
1896	1,000,000	1,000,000
1906	1,000,000	1,000,000
1916	1,000,000	1,000,000
1926	1,000,000	1,000,000
1936	1,000,000	1,000,000
1946	1,000,000	1,000,000
1956	1,000,000	1,000,000
1966	1,000,000	1,000,000
1976	1,000,000	1,000,000
1986	1,000,000	1,000,000
1996	1,000,000	1,000,000
2006	1,000,000	1,000,000
2016	1,000,000	1,000,000
2026	1,000,000	1,000,000
2036	1,000,000	1,000,000
2046	1,000,000	1,000,000
2056	1,000,000	1,000,000
2066	1,000,000	1,000,000
2076	1,000,000	1,000,000
2086	1,000,000	1,000,000
2096	1,000,000	1,000,000
2106	1,000,000	1,000,000
2116	1,000,000	1,000,000
2126	1,000,000	1,000,000
2136	1,000,000	1,000,000
2146	1,000,000	1,000,000
2156	1,000,000	1,000,000
2166	1,000,000	1,000,000
2176	1,000,000	1,000,000
2186	1,000,000	1,000,000
2196	1,000,000	1,000,000
2206	1,000,000	1,000,000
2216	1,000,000	1,000,000
2226	1,000,000	1,000,000
2236	1,000,000	1,000,000
2246	1,000,000	1,000,000
2256	1,000,000	1,000,000
2266	1,000,000	1,000,000
2276	1,000,000	1,000,000
2286	1,000,000	1,000,000
2296	1,000,000	1,000,000
2306	1,000,000	1,000,000
2316	1,000,000	1,000,000
2326	1,000,000	1,000,000
2336	1,000,000	1,000,000
2346	1,000,000	1,000,000
2356	1,000,000	1,000,000
2366	1,000,000	1,000,000
2376	1,000,000	1,000,000
2386	1,000,000	1,000,000
2396	1,000,000	1,000,000
2406	1,000,000	1,000,000
2416	1,000,000	1,000,000
2426	1,000,000	1,000,000
2436	1,000,000	1,000,000
2446	1,000,000	1,000,000
2456	1,000,000	1,000,000
2466	1,000,000	1,000,000
2476	1,000,000	1,000,000
2486	1,000,000	1,000,000
2496	1,000,000	1,000,000
2506	1,000,000	1,000,000
2516	1,000,000	1,000,000
2526	1,000,000	1,000,000
2536	1,000,000	1,000,000
2546	1,000,000	1,000,000
2556	1,000,000	1,000,000
2566	1,000,000	1,000,000
2576	1,000,000	1,000,000
2586	1,000,000	1,000,000
2596	1,000,000	1,000,000
2606	1,000,000	1,000,000
2616	1,000,000	1,000,000
2626	1,000,000	1,000,000
2636	1,000,000	1,000,000
2646	1,000,000	1,000,000
2656	1,000,000	1,000,000
2666	1,000,000	1,000,000
2676	1,000,000	1,000,000
2686	1,000	

and potatoes:	Corn.	Potatoes.
	Qrs.	Tons.
1857. Total estimated yield	11,500,000	3,500,000
1866. " " "	8,803,000	3,000,000

These ten years mark a great change in the husbandry of Ireland, the production of corn having fallen nearly one-fourth while that of potatoes has declined one-seventh. That a change in the same direction in regard to corn has been going on in England, I have no doubt, though not to anything like the same extent. But the rapidity and magnitude of the changes which are now known to have taken place in the breadth of corn land in Ireland and Scotland, are most convincing proofs of the public advantage of annual returns for the whole kingdom.

The acreage having been obtained, the first step, in reckoning the produce of the crop, is to find the yield per acre of an average of years, and the influence of seasons on the yield of each year. I here confine myself to the yield of wheat, which is the staple bread corn of the country. No one can have studied this subject without being impressed with the great care bestowed on the question by Mr. Jacob, Mr. Took, Mr. Newmarch, and Mr. McCulloch. When, therefore, in putting forth an estimate of our crops in 1851, I felt myself obliged to differ from these very eminent authorities, I only ventured to do so from the conviction that the extent of my own enquiries, as *Times*' Commissioner, in nearly every county in England, had given me a command of facts not before accessible. Thirty to thirty-two bushels of wheat an acre had been accepted as the average produce of this country. The facts I had ascertained led me to fix it, in 1850, at not more than 26½; and, notwithstanding the improvements which in the last eighteen years have been made, I do not believe that the average yield of England at this time exceeds 28 bushels. After a certain point is reached the progress of average yield per acre is very slow. Arthur Young, in 1770, summed up the result of his enquiries at an average of 23 bushels an acre. In 1850 mine gave 26½, the whole increase in eighty years

being thus only $8\frac{1}{2}$ bushels. Careful enquiry and observation lead me to the conclusion that, in the eighteen years which have since elapsed, it would not be safe to take credit for an increase greater than $1\frac{1}{2}$ bushel, and even that is nearly twice the rate of progress of the preceding eighty years. We must not forget that a large portion of the wheat land of England is clay of moderate quality, as is proved by the fact that there are still one million acres every year in bare fallow. The average produce of wheat in Ireland during the last twenty years has been found to be a little under 24 bushels. But even this is higher than that of any of our European neighbours, and 50 per cent. above the average of France. Taking the proportion of acreage in England and Ireland, I find 27 bushels to be the average yield of the United Kingdom. The influence of seasons on the yield is the next step to be considered. Its magnitude and effects are very easily illustrated. Of the last twenty years, 1854 and 1863 were the most prolific seasons: 1853 and 1867 the worst. The difference in weight and yield of wheat in 1863 and 1867 was equal to 14 bushels an acre, 1863 having been $8\frac{1}{2}$ bushels above the average, and 1867, $5\frac{1}{2}$ below it. The result is as follows:

Cost of wheat and flour 1863 ...	£40,000,000	
Of which paid for foreign corn ...	...	£6,100,000
Cost of wheat and flour 1867 ...	70,000,000	
Of which paid for foreign corn ...	...	33,000,000

Difference caused by bad season... £30,000,000 £27,000,000

Not only is the price augmented to the consumer by the whole amount of this loss, but nearly the whole of it goes out of the country. There are many here more competent than I to reckon its influence on trade and commerce; and to estimate the value of early knowledge, that thirty millions sterling more will be required in a given year to pay for the bread-corn of the people, and twenty-seven millions more gold be exported in its purchase from abroad. I have framed the following table, showing the fluctuations of the seasons, and their effect on the yield of wheat in the last twenty years, on the basis of the experiments of Mr. Lawes, in Hertfordshire, which have proved a very satisfactory index of the general yield over the chief wheat-producing area of the kingdom, and are indeed the most instructive series of facts for the guidance of the British corn-grower on record:

Yield in bushels minus or plus average.		Yield in bushels minus or plus average.	
1848 ...	— 9 $\frac{1}{2}$	1854 ...	+ 9
1849 ...	— 1	1855 ...	+ 1
1850 ...	— 5	1856 ...	+ 1
1851 ...	— 3	1857 ...	+ 7 $\frac{1}{2}$
1852 ...	— 7	1858 ...	+ 6
1853 ...	— 16	1859 average.	
1st cycle of 6 years.		2nd cycle.	
1860 ...	— 3	1866 ...	— 2
1861 ...	— 1	1867 ...	— 6
1862 ...	+ 5		
1863 ...	+ 12 $\frac{1}{2}$		
1864 ...	+ 7 $\frac{1}{2}$		
1865 ...	+ 4		
2nd cycle.			

A careful consideration of these figures will bring out many points of interest affecting the revenue and wealth of the country, and the comfort of the people. For it is well that we should remember that every requisite of food or clothing is an annual product of the earth, yielded, no doubt, to a large degree, in proportion to the ingenuity and industry employed in it by man. But when man has done his utmost, the result is determined by influences beyond his control. In the literal words of the great apostle, Paul may plant, and Apollos water, but God giveth the increase. Of those substances on which life and health day by day depend, there is every year a new production. There is not a single article of food and clothing that is not, directly or indirectly, of vegetable growth; not accumulated and stored away in the bowels of the earth like our mineral wealth, but dependent year by year on the sun and rain in due season. If we draw a line in the column, beginning with 1854 and ending with 1865, we shall find the remarkable fact, that in these twelve years there were ten good harvests in England, and only two below an average. This covered the whole period of Lord Palmerston's successful

administration. During these twelve years we had to bear the burden of the Crimean war, followed by the Indian mutiny, and the increased military expenditure begun in 1860. From 1855 to the last year, our annual expenditure has averaged sixty-seven millions as against the fifty millions of preceding years; and during that period there has been an actual diminution of taxation of from five to six millions, with no increase in the national debt. Can it be doubted that such a run of propitious seasons aided the gifted minister who conducted the finances of this country to meet successfully our vast expenditure, not only without serious pressure on the people, but with largely-increased development of their industry and resources? Now, this element of uncertain seasons, against which man is powerless to provide, is in reality not so difficult to estimate in its effects as it appears. The great bulk of wheat in this country is produced along the eastern and southern seaboard, from York to Devon, and the adjoining inland counties, extending over little more than three degrees of latitude, within which climate and seasons are very much alike. Hence a few careful trials will very accurately reveal the yield over the whole region. The annual trials of Mr. Lawes in Hertfordshire, which have been conducted with the greatest care for more than twenty years, have proved a wonderfully accurate test of the general yield of the country. That county is a nearly central point in the wheat region. But we need not limit ourselves to it. Accurate trials of yield in various parts of the district may be made by anyone who will take the necessary pains; and according to the care and judgment bestowed, will be the benefit derived in an early appreciation of the result. As greater facility is acquired by experience in the collection of the returns of acreage, we may hope soon to have the facts published in August or early in September. The abstract for Ireland was published for 1867 on 12th September. The public will then have only to apply to that acreage their own ascertained rate of yield, and the total crop of the year will be known. Our farmers being first in the market, and most competent of all persons to test the yield, will be in a position to derive the earliest advantage from the returns. Let us now apply the preceding data to a calculation of the yield of the last harvest. By the middle of September let us suppose that we have had in our hands the returns of acreage. We take examples from various districts typical of the climate of the year, and find, on careful measurement after threshing, that the yield of wheat has been $6\frac{1}{2}$ bushels below the average, but of better than average weight; so that the actual deficiency is reduced to 6 bushels an acre, or 21 bushels instead of 27, as the yield of the crop of 1867 for the whole kingdom. We apply these figures to the acreage of wheat shown by the returns, and find that our last wheat crop will yield us only 9,700,000 qrs.

Here enters the question of annual consumption; for on its amount, and the degree in which it is affected by price, depends the extent of our further requirements. On this important point in our calculations I have prepared a table of produce and imports for the five years preceding 1867, during which period the Irish returns show us that the breadth of corn has undergone little variation. It shows the fluctuation of yield and the total produce of each year, the foreign supply required and received during the succeeding year, the average price of that year, and the total supply of home and foreign wheat and flour in each year from 1862 to 1867. To this I have added my estimate of the produce of crop 1867.

Crop.	Rate of Produce of Bush. per Acre.	Total Home Produce.	Estimated Requirements.	Foreign Supply received during succeeding year.	Average Price of that year.	Total Supply.
		Qrs.	Qrs.	Qrs.	s. d.	Qrs.
1862 20 $\frac{1}{2}$	13,700,000	7,100,000	7,206,000	1863 44	9	20,905,000
1863 32 $\frac{1}{2}$	16,300,000	4,500,000	6,727,000	1864 40	9	23,027,000
1864 32 $\frac{1}{2}$	15,000,000	5,800,000	6,029,000	1865 41	10	21,029,000
1865 29	13,400,000	7,400,000	6,850,000	1866 49	11	20,250,000
1866 26 $\frac{1}{2}$	11,700,000	9,100,000	7,283,000	1867 64	4	18,983,000
			33,900,000	34,091,000		20,800,000
1867 21	9,700,000					average of 5 years

Within this short period is included 1868, the very best crop we have had for twenty years, and 1867, the worst but one. It presents in a very striking manner, therefore, the range of fluctuation in yield, supply, and price, and if carefully studied will show how each affects the others. The first four years were productive, and, the imports exceeding our need, prices fell to the lowest point since 1863. In 1866 the crop was inferior, the price began to rise, and imports at once increased, but not at once to the extent of our requirements, which were met by the accumulation of stock during the previous abundant years. These had been nearly worked out when the very deficient harvest of 1867 was reaped. A glance at the table will show the rapidity of the changes in our home supply and requirements, and will tend to confirm the accuracy of my statement of the average yield. It shows us that the average yearly consumption of the country during the last five years has been 80,800,000 quarters. To what extent is that affected by price? On this point I had the advantage of hearing the opinion of Mr Newmarch, lately expressed in this room, in which I generally concur. It was to the effect that the consumption of bread is very constant, that everything is given up before bread, and that, bread being the staff of life, it must be had by the people whatever the price may be. This view is confirmed by inquiries which I have since made among some of the leading bakers in the most densely-peopled quarters of Whitechapel in the east, and the Harrow-road in the north-west, one of whom has been thirty years in business, and has now three shops in a district entirely inhabited by the working classes. Their testimony is that the consumption of bread at present is very large; for, although dear, it is still the cheapest article of food within reach of the poor; the next substitute, potatoes, being scarce and very dear. Still I feel persuaded that price has some influence, and that the rise on the quarter loaf of household bread from 5½d. in 1864 to 9d., the present price, must produce some effect on the total consumption. With that belief, I will assume that every 10 per cent. of additional price on the loaf diminishes the consumption by at least one per cent. Having now ascertained the produce of the last crop, the average yearly consumption, and the probable rate of economy caused by high price, we are in a position to fix with as great a degree of certainty as is necessary for all practical purposes the requirements which the country will need till next harvest. The only other points affecting the calculation are the amount of old stock in hand from previous harvests and imports, and the length of time, varying between 11½ and 12½ months, over which the pressure may extend before a new harvest can be reaped. These, however, are questions that will not greatly affect the price for the whole year, though they may cause fluctuation, and I think Government ought not to offer any opinion on this, but leave it to the market. For the same reason, because it will to a certain extent be matter of estimate, Government may very well leave all parties interested to ascertain for themselves the relative yield of each harvest, and to act as each sees fit on his own sources of information. My view of the last crop, and of our probable requirements and supplies for the present year, is as follows:

Average annual consumption	...	...	...	80,800,000
Home produce of 1867	...	...	...	9,700,000
				<hr/> 11,100,000

Old stock on hand almost exhausted, and therefore no deduction can be safely made on account of it.

Economy in consumption caused by high price, 5 per cent.	...	...	...	1,040,000
Eight days' consumption saved by lateness of last harvest	...	...	460,000	<hr/> 1,500,000

Foreign supply required 9,600,000

This is at the rate of 800,000 quarters monthly. Six months of the harvest year have now passed, during which our supplies have amounted to 5,646,000 quarters, or 940,000 quarters monthly, as shown by a return made up to 29th of February last, kindly prepared for me by Mr. Bernard, the Inspector-General of Imports and Exports. Thus far, therefore, the imports would appear to have exceeded our requirements. And if my computations are well founded, the balance required during the six months till next harvest is only 4,000,000

quarters. This is a monthly rate of 660,000 quarters, or nearly one-third less than the rate at which, during the last six months, the high prices ruling have brought us foreign corn. In the corresponding six months of last year, our foreign imports exceeded 700,000 quarters monthly, when the price of the preceding six months was 10s. less than at present. I think, therefore, that no apprehension need be felt as to adequate supplies till next harvest, and I can arrive at no other conclusion than that the present range of price is higher than can be maintained. It will be interesting to consider here the rate of price which, in the past twenty years, has been found sufficient to draw out supplies, and then to complete this question by a short consideration of the sources whence we draw our annual supplies. In regard to price, the first consideration, next to our own crop, is the character of the harvest in France. As a general rule, the seasons which are favourable or otherwise for England, are also for France. In a good season, when we least require it, she gives us of her abundance; but we have to meet her as a competitor in the world's market when, as in the last season, the crops in both countries are heavily deficient. The worst harvest we have had in twenty years was 1853, following a deficient harvest in 1852. The deficiency of the home crop in 1853 was twice as great as that of 1867, but an average of 72s. 6d. in the following year brought us sufficient supplies. 1860 and 1861 were short crops, but an average of 55s. 6d. sufficed to draw supplies. Since 1861 the crops have been above an average, till 1866, when the seasons changed, and the crop was short, and 1867, following on that, is the worst we have had since 1853. The pressure has been increased by the short crop of potatoes and their high price, and by the bad harvest in France, and generally in Western Europe. But up to this date our supplies have been ample and we have some comfort in the prospect of the next crop, which was sown in one of the best seed times known, and under the inducement of the high price at that time, on a largely increased breadth of land.

Some instructive tables are given in the returns, showing the area and crops of the various countries whence we draw our chief supplies of corn. The Board of Trade tables furnish the imports. The following figures, in their order, give the proportions in which the various countries, during the twelve years ending with 1866, have contributed to our want in wheat:

	Per cent.
United States	35
Germany	20
Russia	17
France	12
Egypt	6
Other countries	10
	<hr/> 100

The most distant region in the list gives us more than one-third of the whole. The crop reaped on the prairies of the Mississippi finds its way one thousand miles to the sea-board, and is then transported three thousand miles by sea, has to bear all the cost of a double transshipment, the profits and commissions and charges of the various persons through whose hands it must pass, and the final duty of one shilling a quarter, before it comes into competition with the home-grown crop. It is not many years since men could prove that the cost of a certain limited number of miles of transport would exhaust the entire value of corn, and that the range within which it was procurable for our wants must be therefore comparatively limited. The extension of railways, the widening of canals, the use of steam elevators, and the ingenuity and enterprise of the American people, have wonderfully extended that limit. Russia also, already a large contributor to us, will by the same means have her great plains brought year by year more within reach of Western Europe. So widely scattered are the sources of supply, that it is difficult to conceive any circumstance but one that could seriously affect us. We have in the period to which I refer had a war with Russia, during two years of which there was a total suspension of Russian supply. But Egypt and Spain, in those years, made up the whole of the deficiency. It has never happened that all the countries have had a bad season at the same time. If Western Europe fails, America or Egypt is prolific. In 1856 France could spare us only 30,000 quarters, but America gave us 2,300,000. In 1859 America sent only 100,000, but France

the same year close upon two millions. For the next four years, all through the war to the end of 1864, America was blessed with bountiful harvests, and poured upon us her superabundance, with little reference to price; and during these years France had very little to spare. But in 1865 and 1866 seasons changed again—America fell to thirty thousand quarters, and France rose to nearly two millions. The one circumstance which might seriously affect us would be a continued cessation of supplies from America. Of the eleven million quarters we imported in 1863 she gave us five; and, as the figures show, we have received for many years from her, on the average, more than one-third of our yearly supply. In cotton, an import second only in necessity and value to corn, she gives us more than two-thirds of all we receive. Let us hope that interests so great and so mutually beneficial as those which bind together the two great Anglo-Saxon races on opposite sides of the Atlantic, may be more and more cemented by acts of mutual confidence and goodwill. How vast her capacity of export may become it is impossible to conjecture. From the official returns of her last wheat crop, very little of which can have yet reached us, she could, after retaining enough for her own consumption, spare us one-half of all we shall this year require. She produces annually upwards of one million quarters of Indian corn. Indeed, so great and so constant is the yield of this prolific grain, that there may be said to be practically no limit to the supply which in any year a sufficient price could bring into the market. The effect of good or bad seasons is more intensely felt in all the chief corn countries than in our own. This arises from our higher average rate of produce, and the consequent smaller extent of surface at the mercy of the seasons. A bushel an acre, above or below the average, makes a difference to us of less than half a million quarters in the total yield. In the United States each bushel indicates a million and a half quarters, and in France upwards of two million quarters of variation. Hence the suddenness and severity of the fluctuations in those countries, as shown by their exports to us. I cannot leave this part of the subject, without noticing the extremely low average yield of wheat in France. She stands lowest in the scale. England I have stated at 28, Ireland is 24, Austria, Spain, and Holland 23, Belgium 21, and France only 5½ bushels an acre. If this is a correct statement of the yield of France, her average rate of produce is less than that of the very worst crop in England during the last twenty years. It is indeed precisely the same as the yearly average produce of Mr. Lawes' experimental plot, on which for twenty-four years in succession he has grown wheat without manure. In 1855, while travelling in France, my attention was drawn to the very low rate of her acreage yield of wheat as compared with ours, and after publishing my own views on the question, I had an opportunity of discussing them with the eminent French statist M. Léonce de Lavergne, who agreed with me that, apart from the difference in soil and climate, it is probably to be accounted for by the fact that, while our grass and green crops, or restorative area, are as two to one of our corn, France is exactly reversed, her corn or exhaustive crops being as two to one of her grass and green crops. But she, too, is becoming more meat producing, and the margin she has to fill up, by increase of yield, is so wide, that a rise of only half the space between her present yield and that of England would enable her to spare a surplus rather than we have ever yet required from all foreign countries in a single year.

Having thus endeavoured to explain what I conceive to be the main value of these returns, in affording a basis for reckoning, with accuracy, and at an early period, the supplies of corn needed for our consumption, and having dwelt with me minutely on the various elements which ought to be taken into the calculation, I will now touch on the other great part of our agricultural wealth, the live stock, and then briefly consider certain changes in our agricultural management, revealed by the returns, which have naturally flowed on the adoption of free trade. The returns of live stock being made at different periods of the year, do not so help us in speaking with certainty as to how far losses by cattle plague have been made good. Up to October, 1867, when the plague had died out, about 20,000 cattle had died and 57,000 healthy cattle had been killed to prevent the spread of the disease. The returns show an increase of 161,000 cattle in 1867 over the

preceding year. So far as numbers go, therefore, the actual deaths by disease would appear to have been fully made good. But until another year's return is made from the same period as 1867, we cannot depend on the figures representing the same comparative data. A like remark is even more applicable to sheep, the figures in the year 1867 being to a large degree swelled by including lambs born at a date subsequent to that of the returns of 1866. They enable us, however, to reckon the approximate number and value consumed as food, and, along with the returns of crop, to compare the value of our entire agricultural produce with the foreign supply. As this is a point of the greatest interest and importance, I have compiled a table with as much care and consideration as I can command, showing the average amount and value of the whole agricultural produce of the United Kingdom, consumed annually, the value of the same articles received from abroad, and the proportion in which the total supply is contributed by the foreigner:

	Home Produce.	Foreign Supply.	Proportion of Foreign to Total Supply.
Corn of all kinds ...	£24,700,000	£25,000,000	1-44h
Beef and mutton ...	47,200,000	6,500,000	1-9th
Butter and cheese...	30,100,000	8,400,000	1-5th
Potatoes ...	18,000,000	200,000	—
	£180,000,000	£40,100,000	1-5th

To these must be added the annual product of wool, eight millions, and of flax two millions sterling; but these enter into the manufacturing industry of the country, and do not come within our present inquiry. There is no return of horses for Great Britain, and they cannot therefore be included; and the pigs are comprised in the meal and potatoes. The home produce is thus supplied by each of the three divisions of the kingdom:

	England.	Scotland.	Ireland.	Total.
	£	£	£	£
Wheat ...	28,500,000	900,000	2,100,000	31,500,000
Barley ...	16,400,000	2,800,000	1,200,000	20,400,000
Oats ...	10,900,000	6,200,000	8,600,000	25,700,000
Beans, peas and rye ...	6,500,000	350,000	150,000	7,000,000
Potatoes ...	4,100,000	1,900,000	12,000,000	18,000,000
Cattle and dairy pro- duce ...	32,500,000	6,500,000	10,500,000	58,500,000
Sheep and Wool ...	18,400,000	4,400,000	4,100,000	26,900,000
Flax ...	—	—	—	2,000,000
	117,300,000	23,050,000	49,850,000	190,000,000

And in the following proportions in each country, per head of the population and per head of the persons, according to the census of 1861, possessing or working the land, and engaged in its cultivation:

	England.		Scotland.		Ireland.	
	Per Head.	Per Prodr.	Per Head.	Per Prodr.	Per Head.	Per Prodr.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Corn	3 13 6	33 2 0	5 0 3	30 0 0	3 10	12 15 0
Cattle & Sheep	3 7 6	26 8 0	9 0	31 6 0	4 6	25 5 0
Potatoes	4 0 3	2 0	13 0	5 9 0	3 0	12 15 0
Flax	—	—	—	—	7 0	2 2 0
	5 10 0	60 12 0	7 6 0	66 15 6	17 6	53 17 0

Though these figures are offered only as an approximate valuation, they are interesting as indicating the relative results of agriculture in the three divisions of the kingdom, and the important share which Ireland, even in her present depressed condition, contributes to the whole supply of food. The foreign produce in greatest supply is that which can bear the longest carriage, and can be packed in least bulk. Whilst we receive one-fourth of our corn, cheese, and salt butter from abroad, the foreigner sends us as yet only one-eighth of our meat and one-ninetieth of our potatoes. Those who can recall the controversies of twenty years ago on the probable effects of free-trade, will, I hope, pardon me for introducing a passage

written by me at that time, in which I then ventured to speculate on the probable effect of free-trade on British agriculture: "As the country becomes more prosperous, the difference in the relative value of corn and stock will gradually be increased. The production of vegetables and fresh meat, hay for forage, and pasture for dairy cattle, which have hitherto been confined to the neighbourhood of towns, will necessarily extend as the towns become more numerous and populous. The facilities of communication must increase this tendency. Our insular position, with a limited territory and an increasingly dense manufacturing population, is yearly extending the circle within which the production of fresh food—animal, vegetable, and forage—will be needed for the daily and weekly supply of the inhabitants and their cattle, and which, both on account of its bulk and the necessity of having it fresh, cannot be brought from distant countries. Fresh milk, butter, vegetables, and hay, are articles of this description. They can be produced in no country so well as our own, both climate and soil being remarkably suited to them. Wool has likewise increased in value as much as any agricultural product, and there is a good prospect of flax becoming an article of extensive demand, and therefore worthy of the farmer's attention. The manufacture of sugar from beet-root may yet be found very profitable to the English agriculturist, and ought not to be excluded from consideration. With the great mass of consumers bread still forms the chief article of consumption; but in the manufacturing districts, where wages are good, the use of butchers' meat and cheese is enormously on the increase; and even in the agricultural districts the labourer does now occasionally indulge himself in a meat dinner, or season his dry bread with a morsel of cheese. Among the better classes, who can afford it, the expenditure in articles the produce of grass and green crops is nearly nine times as great as in corn. This is the direction in which household expenditure increases when the means permit. It is reasonable to conclude that the great mass of the consumers, as their circumstances improve, will follow the same rule. The only species of corn which has risen materially in price since 1770 is barley, and that is accounted for by the increasing use of beer, which is more a luxury than a necessary of life. Every intelligent farmer ought to keep this steadily in view. Let him produce as much as he can of the articles which have shown a gradual tendency to increase in value." Writing now, with the additional experience of 18 years of free-trade in corn, I can do no better than repeat that advice. The great margin still to be filled up by our own farmers is the daily supply of fresh meat, fresh dairy produce, vegetables, and barley. Since 1850 the price of bread on the average has remained the same; while that of meat, dairy produce, and wool has risen 50 per cent., notwithstanding an immense and increasing import of these articles. This and the steadily advancing price of barley, to which I then referred, is the true explanation of increasing rents and agricultural prosperity, notwithstanding increasing receipts of foreign corn. In the production of barley, as in that of long lustrous wool, this country is still without a rival. Since 1835, when tithes were commuted into a money payment, the average value of the three kinds of corn together has not on the whole altered; but the price of wheat has fallen 12 per cent., while barley has risen 8, and oats 4. The growth of barley in this country has nearly doubled in extent within the last 20 years; while it yields the largest weight per acre of any kind of corn, it seems the least exhaustive to the soil, and leaves it in the best condition, as it occupies the ground for the shortest period from seed-time to maturity.

I come now to the application of my paper by the question: How much do these vast supplies yield to the daily wants of the people; in what proportions are they distributed among them; and what modifications seem probable in our system of husbandry? Writers on dietetics tell us that one pound of bread, one pound of potatoes, and six ounces of meat are required for the minimum of daily healthy diet. I have computed the amount of all our supplies, home and foreign, of wheat, potatoes, and meat; have converted the wheat into flour, and the flour into quatern loaves; and I find that if our bread, potatoes, and meat were equally spread over the population of the United Kingdom, the present supply would give one pound of bread and one pound of potatoes; but only two ounces of meat, and the equivalent of one ounce of butter or cheese daily to each person. But it is not equally spread, the proportions in Britain and Ireland being really

very different. The people in England and Scotland have among them a pound and a-quarter each of bread, and half a pound of potatoes a day; the people in Ireland four-and-a-half pounds of potatoes each, and only a quarter of a pound of bread. Whilst there is thus in Ireland still far too great a dependence on the potato for food, there would seem to be room in England for some additional supply of that excellent, so wholesome as a portion of diet. The home supply might be increased with great advantage to the consumer by the extension of potato husbandry on suitable soils, in all the English counties, near the seats of large populations. The proportion of population in various European States to each acre of potatoes, and therefore the degree of their dependence on it for food, affords a tolerable indication of their material prosperity. They stand in the following order:—England, 66 people to each acre of potatoes; Wales, 26; Scotland, 20; Denmark, 20; Belgium, 13½; Holland, 13; France, 12½; Sweden, 12; Prussia, 5½; Ireland, 5½. Prussia and Ireland thus stand pre-eminently as potato countries. They have consequently suffered the most severely by the disease of that root, and the emigration from both countries has been greater than from all other European States. But, notwithstanding the past, so great is the temptation presented by this prolific root to the necessities of a poor population, that its culture in Ireland within a very few years after the famine rapidly revived, and at this moment the production of potatoes in proportion to the diminished numbers of the people, and their dependence on it for their food, is almost as great as it was before 1845. In Prussia the production of potatoes is also enormous, but the root is not used as in Ireland solely as an article of food. The German excise regulations are so framed as to admit of greater freedom of action on the part of the farmer, who is thus enabled to unite with his agriculture the business of distillation. He extracts the spirits for sale, and retains on his farm the other feeding properties which his roots possess. Two million tons of potatoes are thus annually disposed of in Germany. German spirits find their way all over Europe, and, notwithstanding the enormous rate of duty to which, in common with the spirits produced in those countries, they are every way subjected, the business thrives and increases. All our root crops contain various proportions of sugar, which in many cases might, in one form or another, be extracted with advantage on the farm; the other qualities of the root being used for cattle food. But the stringency of our excise laws has hitherto prevented every attempt so to utilize it. Now the British Islands, and Ireland especially, are pre-eminently fitted for the production of root crops and barley. Why should they be restricted in the conversion of these to the most profitable use? The law seems to have come for a reconsideration of our Excise laws, and for the substitution, if it be possible, of such a system of levying duties as should leave to the producer the most perfect freedom for the fullest development which skill and capital might enable him to make. In the extract already read, reference was made to flax and sugar, as articles likely to form a future object of culture to the British farmer. Flax has now attained considerable importance in Ireland, the annual value of the home-growth in recent years exceeding two millions sterling, or nearly one-half the total value used in the important branch of our manufactures. Sugar from beet was tried in Ireland twenty years ago, but failed, chiefly for want of the necessary arrangements to carry out the extraction and purification of the juice. The question has this year been revived by some persons as a remedy for the ills of Ireland; by others as a branch of national industry, which, if it succeeds, will be alike advantageous to the agricultural interests of the United Kingdom and to the consumers of sugar. The steady and continuous extension of beet-root sugar on the Continent, within recent years, sufficiently proves its remunerative character; for wherever the culture has been established, the employment and wages of labour have been increased, the number and quality of fattened cattle have augmented, and the land has become more productive and more valuable. Having been consulted as to the most suitable county in which to make a beginning in England, I examined the agricultural returns, and suggested Suffolk, that county being the most extensive producer of mangold near the metropolis. And I am glad to be able to announce that arrangements have now been completed to try the experiment in that county, this year, on a scale sufficiently large to test its probable success. I might now proceed to many most interesting points, affecting agricul-

ture, disclosed by these returns—such as the relative productiveness of districts of large and small farms; of corn and grass; of sheep and cattle; of dairy husbandry; of the course of crops in particular districts; of the importance and wealth of certain counties as compared with others; the extent of farms as influenced by climate and soil, on all of which the most valuable information is afforded. But these questions must be left to other labourers or to another time. Suffice it now, in conclusion, to say that the effect of free trade on the food of the people of this country has been to moderate the price, and immensely increase the supply of food. And for my own part I feel thankful that in the House of Commons I was the instrument of carrying a resolution which led to the collection of these returns. For, in supplying a basis of certainty in the acreage, they have given us the power of answering, with accuracy and in good time, the question whence the thirty millions of people, who live within the narrow limits of the British islands, shall year by year be provided with their daily bread.

NOTE.—The prices and proportions on which the valuation of the annual produce of live stock was made are as follow:—Dairy produce of cows in England, £10 each; in Scotland, £8 each; Ireland, £7 each. One-fourth of the whole of the cattle in the respective countries is assumed to be sold annually at £16 each in England, £14 in Scotland, and £10 in Ireland. Of sheep, the wool is valued in England and Ireland at 8s. a head, and in Scotland at 6s. One-third of the sheep in number in England and Ireland, and one-fourth in Scotland, are assumed to be sold every year at an average price of 35s. each.

ESTIMATED, COMPARED WITH ASCERTAINED EXTENT OF CROPS.—In my letters in 1850 as *Times*' Commissioner, the extent of the various crops in England was estimated, and the estimates are here shown in comparison with the actual acreage now ascertained by the returns.

	Mr. Caird's Estimate in 1850.	Agricultural Returns in 1887.
	Acrea.	Acrea.
Wheat	3,416,000	3,140,000
Barley	1,417,000	1,899,000
Oats and Rye . .	2,000,000	1,550,000
Beans and Peas . .	1,139,000	820,000
Total Corn Crops . .	7,972,000	7,402,000
Green or Root Crops and Rape	2,416,000	2,700,000
Bare Fallow	1,000,000	753,000
Clover	2,277,000	(1866) 2,296,000
	13,665,500	13,151,000

The changes shown by these figures are—

	Acrea.
A diminution in Wheat of	280,000
Ditto Oats	450,000
Ditto Beans and Peas	320,000
Ditto Bare Fallow	247,000
	1,297,000

And—

	Acrea
An increase of Barley	500,000
Ditto Root Crop	300,000
Ditto Clover	20,000
	820,000

Diminution 477,000

This difference has probably gone into permanent pasture. These changes are quite in accordance with what might have been anticipated, and tend to confirm the accuracy of the estimate made in 1850.

SALE OF MR. STRATTON'S SHORT-HORNS, AT BROAD HINTON.

Although Mr. Richard Stratton removed, some years since, to Wall's Court, near Bristol, two of his sons have continued the occupation of Broad Hinton, which, with another farm adjoining, would count up in all to somewhere about seventeen hundred acres. The property, however, has recently changed hands, and the Stratton family having decided to give over their tenancy, a sale became an inevitable consequence; but this was by no means one of merely draft-stock, as there were many very good-looking animals in the catalogue, backed by a strong taste of good Booth blood. Nevertheless, considering Mr. Stratton's reputation as an exhibitor, the occasion did not draw so well as might have been expected. Hinton, to be sure, is a long way from everywhere; a very up-hill eight miles drive from Swindon—the safest station to book for, as even here the accommodation in the way of conveyance was soon exhausted. Still, with a beautiful day, there was a strong attendance of friends and neighbours within easy reach, and the few connoisseurs were mostly handy home. Mr. Bowly, from Siddington, Mr. Moore, from Colehill, Mr. Garne, from Churchill, Mr. Thompson, from Badminton, Mr. Little, from Chippenham, and Mr. Hewer, from Sevenhampton, were "bound to be" looking on; while Mr. Milsome from Warwickshire, and Mr. Tyacke from Cornwall had more business-like intentions. The other bidders have not achieved much, so far, in the annals of Shorthorns, though there was nothing now to prevent their making a beginning, as many of the lots went very cheap, and the proceedings were marked by a pretty general tameness. Mr. Dodds, to be sure, has not much "go" about him, for he was often inaudible across the ring, dropping a by no means powerful voice into something like a col-

loquial tone to those about him, and relying a deal too much upon the glass. The use, as we take it, of this somewhat questionable ally, should only be resorted to when the biddings flag, and, once set running, the lot should be booked forthwith, in case of no further offer being made. It seems to be a somewhat nice point whether, if the auctioneer turn the glass up again without another bid, the last man in cannot claim the lot; although in practice this ruling is not so very strictly observed.

The business began, punctually enough, with the old cows, that had certainly not been prepared for the public ordeal they were about to undergo, some being noticeably poor in condition, as most likely they would have repaid any little outlay in feeding-stuffs. At twelve, eleven, ten, seven, or eight years old, long prices could not, of course, have been anticipated; and, of the fourteen opening lots, Rose of Sharon, going straight back to the Moss-Roses, alone topped thirty guineas.

There was a marked and very proper advance over some of those following, such as Emerald, a fine fresh broad cow, who made 52 guineas, but whose own sister, as it was announced, was sold privately for 150 guineas. Queen Mab, again, Transit, and Placida were young and handsome enough to have made far better prices with a better company; and some of the young stock were, judging by appearances, their fine growth, good coats, and so on, still greater bargains to the buyers. The pick of the young bulls—a calf called Coronation, by Bude Light out of a Young Windsor cow—was purchased by Mr. Milsome for 45 guineas; but the names of the buyers were not always to be heard, and the train would not allow of our waiting for them. Mr. Arkell, however, was continually announced as having secured some of the

best lots, although whether bidding for himself or not did not transpire. A calf by Cornet out of Novelty made 22 guineas; and two or three others, not in the catalogue, were also put up, the total proceeds of the day's business amounting to somewhere about 2,600 guineas.

COWS AND HEIFERS.

	Gs.
Meadow Queen 3rd, calved March, 1856...	19
Michaelmas Rose, calved October, 1857...	24
Casket, calved January, 1858...	20
Alice, calved February, 1858...	31
Her calf (by Duke of York), 12 months old...	11
Miss Glanville, calved June, 1859...	20
Clara, calved June, 1859...	18
March Rose, calved March, 1860...	27
Dulce, calved June, 1860...	26
Her calf (3 months old)...	18
Young Hinda, calved June, 1860...	20
Her calf (6 months old)...	14
Laurel Wreath, calved April, 1861...	25
Enigma, calved May, 1861...	28
Rosemary, calved May, 1861...	30
Rose of Sharon, calved August, 1861...	31
Cinnamon, calved February, 1862...	29
Parade, calved May, 1862...	44
Starshot, calved June, 1862...	27
Paragon, calved October, 1863...	27
Her calf...	8
Rose of August, calved August, 1863...	40
Cherry Bloom, calved October, 1863...	20
Jewess, calved March, 1863...	27
Emerald, calved March, 1863...	52
Rose of Windsor, calved March, 1863...	35
Gertrude, calved April, 1863...	29
Queen of the South, calved April, 1863...	22
Queen Mab, calved April, 1863...	54
Fashion, calved May, 1863...	33
Lady Nottingham, calved July, 1863...	23
Novice, calved September, 1863...	29
Matchless, calved November, 1863...	33
Mabella, calved April, 1864...	36
Cashmere, calved July, 1864...	22
Brilliance, calved July, 1864...	33
Transit, calved August, 1864...	40
Heiress, calved August, 1864...	35
Red Nymph, calved September, 1864...	22
Legacy, calved September, 1864...	30
Windsor's Last, calved September, 1864...	40
Novelty, calved February, 1865...	41
Placida, calved February, 1865...	48
Gipsy Queen, calved February, 1865...	25
Hornet, calved February, 1865...	33
Matchless, calved March, 1865...	26
Actress, calved April, 1865...	24
Vesper, calved August, 1865...	32
Johanna, calved August, 1865...	19
Red Rose, calved August, 1865...	20
Velvet, calved September, 1865...	27
Oak Apple, calved December, 1865...	32
Prudence, calved January, 1866...	26
Purity, calved January, 1866...	18
Concord, calved January, 1866...	25
Moonlight, calved February, 1866...	25
Silver gilt, calved February, 1866...	24
Gambol, calved February, 1866...	28
Latona, calved February, 1866...	19
Little Bee, calved February, 1866...	23
Balsam, calved March, 1866...	16
Moss Rose 5th, calved March, 1866...	26
Nosegay, calved March, 1866...	19
Jenny Deane, calved March, 1866...	38
Venus, calved March, 1867...	25
Verbena, calved April, 1866...	16
Noormahal, calved April, 1866...	17
Annette, calved April, 1866...	21
Maid of Athens, calved April, 1866...	33
Matchless 13th, calved April, 1866...	16
Ann of Gierstien, calved April, 1866...	15
Elaine, calved May, 1866...	18

Honeycomb, calved May, 1866...	Gt. 14
Snowdrop, calved May, 1866...	17
Evangeline, calved June, 1866...	16
Larlina, by Moonraker...	23
Glittering Star, calved August, 1866...	17
Amethyst, roan, calved May, 1867...	31
Glitter, roan, calved December, 1867...	11
Camilla, roan, calved February, 1868...	30
Ariel, roan, calved February, 1868...	10
Gentian, calved February, 1868...	6

YOUNG BULLS.

	Gs.
Oberon, red roan, calved October, 1866, by Bude Light...	42
Asp, light roan, calved February, 1867, by Bude Light...	18
Argus, roan, calved March, 1867, by Bude Light...	40
Rostrum, roan, calved March, 1867, by Bude Light...	17
Bolus, dark roan, calved March, 1867, by Moonraker...	36
Don Pedro, red, calved March, 1867, by Bude Light...	24
Pilot, roan, calved June, 1867, by Bude Light...	10
Coronation, roan, calved August, 1867, by Bude Light...	46
Seneschal, roan, calved August, 1867, by Bude Light...	13
Grey Friar, roan, calved August 1867, by Bude Light...	21
King Lear, roan, calved September, 1867, by Bude Light...	22
Gipsy King, red, calved September, 1867, by Cornet...	7
Norman, white, calved September, 1867, by Cornet...	14
Trajan, roan, calved September 1867, by Bude Light...	17
Red Gauntlet, rich roan, calved November, 1867, by Bude Light...	31
Roman, roan, calved December, 1867, by 8th Duke of York...	18
Childers, red, calved January, 1868, by 8th Duke of York...	9
Shylock, red roan, calved February, 1868, by 8th Duke of York...	10
Cupid Light, roan, calved February, 1868, by 8th Duke of York...	23
Duke of Lancaster, red and white, calved February, 1868, by 8th Duke of York...	16

COLOUR OF THE CLOUDS AND SKY.—A short time ago the German periodical *Poggendorff's Annalen* contained a paper by M. Lommel on "The Evening Glow and Similar Phenomena," somewhat too mathematical for our purpose; but before the appearance of that paper Mr. Sorby had discussed the same subject in a more popular form, extending it to the colours of the clouds and sky, which he explains on the principle that the clear transparent vapour of water absorbs more of the red rays of light than of any others, whilst the lower strata of the atmosphere within no great distance from the surface of the earth offer more resistance to the passage of the blue rays. This is especially the case at sunrise and sunset, and very perceptible in the case of dark-coloured fogs, through which the sun appears red. This is often due to only a few hundred yards' thickness of such a fog, and it is highly probable that the same effect will be produced by a thickness of as many miles of pure air containing watery particles very thinly disseminated. It is thus Mr. Sorby explains nearly all the phenomena connected with the question. The blue colour of the sky is due to the absorption of a considerable amount of red light by aqueous vapour, far from the earth's surface; but if minute particles of liquid water form a thin mist, the blue of the sky will be diminished, as is the case in winter and in cold countries. If the air be much charged with transparent vapour, the blue colour will be deeper, and will thus become an indicator of rain. At sunrise and sunset, the light of the sun has to pass through about 200 miles of atmosphere within a mile of the surface of the earth, in order to illuminate a cloud a mile from the ground. In passing through this great thickness the blue rays are absorbed to a far greater extent than the red, and much of the yellow is also removed. Hence clouds thus illuminated are red; but when the sun rises higher, the yellow light passes more readily, and the clouds become orange, then yellow, and finally white. Clouds in different parts of the sky, or at different elevations, might show these various colours at the same time, as indeed is often the case.—*Galignani*.

THE EWE AT LAMBING TIME.

BY A PRACTICAL FARMER.

The lambing season is to the sheep-breeder one of the most important periods of the year, and one to which he looks forward throughout the winter with much interest, and some anxiety. The man of experience knows full well that his success in the lambing season depends mainly upon the healthful progress and quietude of his ewe flock during the winter, and up to the very time of lambing. To ensure this satisfactory condition, it is requisite that they be kept in equable state, and upon keeping of a healthy character, just calculated to keep them steadily progressing, but not good enough for fattening. There is equal danger in the lambing season to fat ewes and lean ewes; but ewes in a strong healthy condition, and kept in quietude, are almost free from danger. It is no uncommon thing for shepherds to bring their ewe flock through this dangerous season with scarcely any loss, if the above management has been strictly observed; but if the ewe flock has been irregularly kept, *i. e.*, sometimes pinched for food, sometimes supplied with highly nutritious food in profusion, and sometimes none at all, it is no wonder they become of feverish habit, which will lamentably show itself at lambing time. It is almost as bad to fatten up breeding ewes. In almost every case of protracted labour they are attacked with inflammatory symptoms in one region of the body or another; besides, the secretions going to make fat deprives them of milk. In this respect the "poor ewe" excels the fat one in providing more milk for her progeny. Quietude is almost indispensable to a successful lambing season. The ewe when heavy in lamb should never be permitted to move swiftly. A lengthy gallop or sudden fright is almost sure to endanger the ewe, by displacing the lamb in the womb, or causing abortion. I have known many very severe losses to arise from greyhounds suddenly coursing a hare across a field, and hounds crossing in their fox-hunt do many flocks great hurt. I repeat, good wholesome keeping, in moderation throughout the winter, and great quietude, are essential to the welfare of the ewe flock, both before and at lambing time.

The Time for Lambing.—Every sheep-breeder should settle in his own mind the time for lambing before he puts the rams to his flock. Much will depend upon circumstances—the locality and climate, the keeping and provision he is able to make, the disposition of the ewe flock after lambing and weaning, and the thousand-and-one things that may enter into his practice and course of management. The customary time for putting the rams to the ewes in this country is almost by universal consent the months of September and October; consequently the lambing season falls in March and April, which is considered the most acceptable time. For this time, then, every provision should be made according to the capabilities of the farm. If the conveniences for lambing are meagre and confined, it would be desirable to mark the ewes whilst with the ram, so as to denote the precise week when "their times are up." This will allow the early-lambing ewes to be drawn from the later ones, and thus avoid crowding in the lambing pens or folds where such are used. I think the safety of very many lambs just dropped depends upon the warmth and the shelter provided for them, and many are the contrivances for this purpose. In all cases over-crowding and undue warmth to the flock should be avoided, as also wet or tainted

lairage. It is dangerous to shut the flock in a warm yard at night, and to turn them into a cold and possibly wet field in the day; extremes of all kinds must be avoided. It is a difficult time to get through when the weather is severe and changeable; all that can be done is to prepare for the worst. My own preparation consists in two paddocks adjoining the shepherd's cottage, well sheltered by a thick hedgerow, and sufficiently large to hold about 300 ewes without crowding. In these are made temporary pens of wattled-straw sheep trays, some covered, some airy. Into these paddocks the ewes are brought every night when dark and cold, and returned to the "lambing field" adjoining, every morning (occasionally, with a bright moon, we leave them out at night), thus keeping the paddocks somewhat free from taint and gangrenous deposits from lambing ewes, &c., &c. The shepherd or his occasional assistant is always out with them, or at hand. The field (30 acres) is also provided with a number of these warm pens, into which the ewe and lamb just dropped are placed, if desirable. The flock has this large grass field to roam over, and they are supplied moderately with cut oat-sheaf chaff and mangolds *ad lib.* Of course, in severe snow-storms or dripping rains, we improvise fold yards, hovels, stables, barns, even to the kitchen, fire-side, &c. Every sheep-breeder must make preparation in some way or other for warmth and shelter at this season, and his contrivances generally accord with the site and locality of his farm. I once visited a successful breeder in the lambing season, and found his ewe flock located in roomy stone pits, or series of roomy stone quarries; they were almost housed; and cold and snowy as it was, they appeared to take no hurt, being liberally supplied with roots, hay, corn, and cake. On the Wiltshire Downs I have seen the ewe flocks on the turnip fields with scarcely any shelters, attended by the shepherd, who lives for the time in his moveable apartment. This is their custom, but it looked very cold and comfortless; nevertheless the losses are not very severe, which I attribute to the abundance of milk arising from lambing on turnips. On the Romney Marshes, the most windy and bleak of all marshes, their fences all open ditches, without hedge or tree, I have seen their lambing-providings meagre in the extreme—a corner of a bleak field, or like cold place, with the "shepherd's house" or shed. How the breeders there do save their lambs, I can't conceive: what with cold and what with ditches, the vigilance of the shepherd must be severely taxed. His temporary abode is, however, generally well provided with necessities for himself and his flock. It cannot be too forcibly impressed upon breeders that much of the success in "lambing the ewes" will depend upon these comparatively minor points. Every breeder must of course use his own judgment as to the best provision he can make to save the lives of both dam and lamb. Some years ago it was my misfortune to lose, I think, twenty-six ewes and about forty lambs, from the effects of only one night's heavy snow-storm. The snow next day was ten inches thick. It is wise even to prepare for such an unusual calamity. In doing this, care must be taken not to err on the contrary side. It is highly improper to confine the ewes, as I have already said, in warm yards at night, and turn them afield in the morning. The change is too great; and colds and in-

inflammatory action are imminent. Extremes here must be avoided. The predominant quality of a farmer's mind should be good judgment. He is never in greater need of it than in his lambing season. Constant attention, and clear, good judgment will save many a flock.

The Shepherd.—His duties, anxieties, and cares at this season are very great. He should have every requisite aid and encouragement. He should have a fire accessible, or, better, near at hand. He should be provided with a "shepherd's crook," a small iron hook, a strong, small cord, with loop, a knife, a piece of ruddle. He should be provided with a bottle of warm milk, a phial of laudanum, a phial of sweet spirits of nitre, a bottle for gruel, and in dark nights a dark lantern to enable him to walk about without disturbing the flock. Thus provided with simple instruments and essentials for his success, his labours and cares begin. The crook is to enable him to catch the ewe without injury. The small iron hook is for use in difficult cases of presentation: he may insert it in the womb, with great care, when all other means fail, and very probably bring forth a foot or the head, &c. The cord is for attachment to a foot or other presentation, in extreme cases, so as to keep hold of it during the operation of taking away the lamb; the ruddle, to mark the lambs into pairs, or other means of knowing them; the bottle of milk, to supply any necessities lamb; the phial of laudanum, to give from it nearly a tablespoonful to the ewe after a very severe labour. It will "lay her easy," and keep her from "paining," so as to give time for the parts to subside and calm down as she lies: this only to be resorted to in extreme cases. The phial of sweet spirits of nitre to give in cases of fever—to be supplemented by Epsom salts and ginger or castor oil, if further needed; the gruel, of course, for every ewe after severe labour: the gruel—flour, water, treacle, and a little ale, according to judgment. In all cases, the ewe should have ample time for her natural effort; but it is wise gently to examine her, to ascertain that all is right; if so, she may generally be left a reasonable time before giving her aid, but not too long, lest the lamb should be destroyed by her strong paining, which is often the case. In cases of wrong presentation much care is requisite.

The ewe should be laid on her side, and gently held down by an assistant. The shepherd (who ought to have a small hand) should oil or grease it: he should then, with as little effort as possible, insert it in the womb, and ascertain what is wrong. If he can get a foot, he should attach his cord to it, or even the head; if the case is very difficult, better kill the lamb than the dam. He may have to turn the lamb in the womb. It is no uncommon thing for the back of the lamb to be presented: this, of course, must be forced back, and either fore or hind-quarters be brought forward. It is better to bring the lamb away by the hind-legs, rather than turn it, if it can so be got away. If the lamb must be turned, the attendant should hold the ewe up by her hind-legs, so as to aid the shepherd in his effort to push it back, and to prevent paining. It is a sorry case for the ewe when this has to be resorted to; and not only attentive nursing is necessary, but the parts become so bruised and inflamed that gangrene is imminent. To prevent this, warm fomentations and mollifying ointments or oils may be internally and outwardly used. "Gangrenous oils" are so strong and virulent as to do harm rather than good. I never use them now, because I found the dressing made the ewes pain more than before using.

In all cases of lambing the udder of the ewe should be examined, the wool should be cleared from the teats, and the lamb suckled. If the lamb obtains a good meal, it is not a little cold that will injure it. If the wool is left around the teat, the lamb will suck it in, to its own destruction—yes, even when it gets to be several weeks old. As the ewes lamb, they should be separated from those yet to lamb, and placed upon the best and most healthy keeping the breeder can provide for them; and the lambs ought to be taught to eat a little meal or cake, in compartments which the ewe cannot enter. The shepherd ought also to keep a good oversight of them, not forgetting to use his bottle of milk where needed. This continuous separation will greatly relieve the labours of the shepherd, and there will be little danger of the lambs losing their dams. The castration and marking off may take place in about ten to fourteen days after lambing, depending much upon the weather. Mild and showery weather is thought most desirable for it.

EARNING AND LEARNING.

A very large meeting of the Barnstable Farmers' Club assembled to hear a Lecture announced to be delivered by the President, Rev. Prebendary Brereton, on "Earning and Learning." About a hundred members of the Club were present, including the Earl Fortescue.

The President, after some preliminary business, delivered his Lecture, from which we take the following: It is clearly a mistake to encroach upon earning for the sake of learning, or to interfere with the services that through their several occupations, trades, and professions, the people are rendering to each other and to the nation, in order to promote by compulsory means the enjoyment of knowledge. We are justified in denying that it is the duty of the state to levy by taxation funds for teaching, or to assign by legislation hours for learning, if those funds and those hours are thus withdrawn from the ordinary course of earning. Because learning, if it is to be considered as a benefit to the possessor, should be attainable only as the reward of previous earning, and cannot be on any sound principle a matter for public cost and compulsory levy. And if learning be more properly regarded as itself a great contribution to earning, and indeed an earning in the truest sense, something that is good for others rather than for self, not even in this view can it be properly regarded as

dependent upon taxation. For though the result of learning is thus public benefit rather than private, yet the principle upon which it becomes so, namely, as an earning, requires that free interchange of services rendered, acknowledged, and repaid, which is inconsistent with compulsory maintenance and official superintendence. There are, indeed, some who maintain that school education is a public necessity, which, like safety of property or person, cannot be dispensed with on the one hand, or left to private enterprise on the other. But this doctrine is more easily asserted than proved, and at all events is one which neither we nor our fathers have yet acknowledged. And though it would, if true, establish a real claim for a system of education completely dependent on taxation, and subject to the fullest control of Government, it would in principle, and probably in fact, destroy the claims which education now has on every other kind of support. Every other consideration must of course yield before a claim of supreme necessity. I confess that if I believed with some that a complete and stringent system of public education would remove with ignorance the chief cause of present evil, and not be itself a cause of greater harm to national life, I should be deterred by no consideration of cost from urging its immediate adoption. Where would be the harm of adding two or four millions to

our taxation if everybody were in consequence to be happier and the country richer? Who would grudge the cost if he were persuaded that, because this one thing is not done, therefore sorrow is increased and misery spreading? The cost of State education is not the real objection to it, supposing the thing itself to be necessary and right. Taking the highest estimate of that cost, the amount seems small when compared with the property of the country and its other public charges. But if the system is neither necessary nor expedient, then the question of cost is a very proper ground for practically refusing it. Great as the wealth of this country is, that wealth is itself precarious, and the burdens upon it enormous. We are not so rich as to be able to afford unnecessary, still less mischievous, additions to our expenditure. The true question, however, is not one of financial difficulty, but of moral principle and political expediency in the highest sense. Is it right and is it wise to transfer from the parents to the State the moral obligation of bringing up their children in the best way? A moral obligation is one in which a choice is freely left to the person under it of doing right or wrong; and this choice will not ultimately depend upon the character of the chooser, but will be a means of forming that character. A bad man will no doubt, on the whole, choose the wrong, and a good man the right. The utterly bad should, for the sake of the community, be deprived of their power of choosing, since the consequences of their choice may be expected to be evil for others as well as themselves. The thoroughly good, on the other hand, might be disposed to surrender their right of choosing, on the modest assumption that the collective wisdom of the community would be more trustworthy than their own. But, after all, what a small proportion of the whole community is composed of the thoroughly good or the utterly bad! And for this great mingled mass of ordinary men can it be desirable that they should be deprived of one of the most wholesome checks on what is evil in them, and encouragements to what is good, which the responsibility of parents in the matter of education of their children imposes? That responsibility is the strongest and noblest stimulus to earning. Men never work harder or more cheerfully than when they think of their children; and as life begins to wane no satisfaction can attend a man's later years equal to that of having honourably and by his own efforts educated—i.e., in plain English, well brought up—his family. Compulsory education has a direct tendency to sap this great foundation of wealth and happiness—the responsibility of parents. Will the knowledge that it gives be an adequate compensation? Again, compulsory education must, from the nature of the case, come in conflict with religion. Religious teachings must be more and more kept out of new schools, and thrust out of old ones, as these schools are made to depend upon taxation. Everyone who is compelled to pay a school-rate will have a right to object to his money being applied to the teaching of anything that he himself believes to be false. Hence conscience clauses, gradually more and more stringent, must arise. A noble lord, much respected in this neighbourhood, has just been claiming in the newspapers the credit of having practically originated the principle of these clauses. Let me read you Lord Portsmouth's conscience clause:

"RULES ON THE EARL OF PORTSMOUTH'S SCHOOL, HURSTBOURNE PRIORS.—This school is provided for the instruction of children of persons resident in the parishes of Hurstbourne Priors and Tuford; and being intended for the education of children of persons of all sects, Lord Portsmouth limits the religious instruction of the children to reading in the Bible daily, learning the Lord's Prayer, Belief, Ten Commandments, and their duty to God and their neighbour."

This clause obviously is intended to shut out from the school a good deal of learning which Lord Portsmouth thinks mischievous, and which the Bishop of Oxford and others may think important; but it retains so much religious teaching that a school or a system on this basis could not be considered as otherwise than religious. But how much of what Lord Portsmouth wishes to keep would not others wish to remove? If the schools are to be maintained by rate, and the regulation, as has been proposed, entrusted to county boards (the plan most favourable to the influence of religion), would not Lord Portsmouth have to make concession to some neighbouring landlord, representing as large a district as his own, who would, on Roman Catholic grounds, strike out the Bible, while another, on rationalist grounds, would strike out the creed, the Lord's Prayer, and the decalogue? I am at a loss

to think what ground would be then left for teaching on any intelligible principle duties either to God or to neighbour. An hour's discussion at any county board will make Lord Portsmouth's conscience clause so stringently exclusive that if it should be enforced on his own school at Hurstbourne he would probably feel conscience-bound to build another by its side, in which, at least, his own sense of what children ought to be taught in school would be at liberty to express itself, and in which, perhaps, even more than he quite believed himself to be right or necessary, would, for the sake of conscience, be admitted. This is the great difference between a voluntary and compulsory system, that while both will give you the practical knowledge that is useful for this world, and therefore called secular, the voluntary system will give you much besides, that may be and ought to be useful for more than this world, or for this world in a higher sense. This additional teaching, however, may be, and often is, mixed either with real falsehood, and is therefore mischievous, or with what some think to be falsehood, and is therefore offensive; whereas the compulsory system, in avoiding this offensiveness, will avoid also the possible mischievousness, but will destroy also all the higher and possibly highest good that ought to result from the union of religion and education. But, besides the objections that may be urged against compulsory education, on the ground of its interference, first, with parental responsibility, and next, with the religious element in teaching, there is another that should not be forgotten: while it displaces one set of influences, it replaces them by another. As the parent and the religious minister retire, the state-schoolmaster, the inspector, the Minister of Education, come forward. Who can say that no results will follow, affecting seriously the spirit and character of the whole people? Suppose the system complete, and that for five hours in every day and for five years of life every English child is put into this State-mould, how much of the independence—how much of the originality, the enterprise, the versatility—how much of the hearty work and hearty play that have made England up to this time great and glorious will remain? or, again, where is the mind that is to guide this great machine so as not to do this mischief? who is to be commander-in-chief of the army of State teachers? Probably, at the present moment, general consent would point to Mr. Lowe as the ablest man who has taken a public part in this matter. Is Mr. Lowe's a mind that would wisely guide the teaching, and so form the character of the next generation? Starting with an extravagant distrust of the labouring class, and vehemently disputing their fitness for citizenship, no sooner is that citizenship granted than he servilely haile them as masters, and would compel us all to fall down and worship the idol we have set up. Is that the spirit in which the education of England is to be conducted? And yet once form your system and come to choosing its chief, and who will name to me an abler man for the post? But my time runs short, and I must hastily state the conclusion at which I have ventured to arrive as to the true course which one would wish the nation to follow on this great matter. Recognizing that public education is in itself most desirable, and that the opportunities of instruction should be placed more than ever and as much as possible within the reach of all, yet not so as to interfere with sound principles of free earning and learning, I turn to other public requirements of a similar kind, and ask, How they are supplied without the evils of a State system? Public health is at least as important as public instruction. How is the cure of disease provided for? By the great public profession of medicine, depending mainly on the free payments of patients, but encouraged and sustained also by considerable endowments, in the shape of public hospitals, &c., and in the case of the paupers by public grants. The members of the profession in its higher, and subordinate ranks spread themselves over the country carrying all the resources of their art with them. The preparation for their profession has been made at their own cost, the prospects opened by its emoluments being enough to attract into its ranks persons from the middle and higher ranks in sufficient numbers to make it unnecessary to charge upon rates or taxes any sum for the training of doctors. Why may not the same result be brought about in education by taking pains to extend the profession of teachers? With this object the first thing wanted is a vigorous administration of existing endowments, on the principle that they shall be made really productive of public benefit. These endowments are estimated at various sums, amounting to and exceeding half-a-

million annually. In Devonshire alone, the income from various charitable endowments is returned as exceeding £25,000. What right have we to make any charge upon present taxes or rates before we are quite certain that this munificent provision of our forefathers for us, their children, is so administered as to produce the greatest amount of public good? Whether applied as capital or income, think what a sum is here more or less available! Consider again the amount that is now voluntarily and cheerfully paid, whether by parents or other friends, private or public, of the children, an amount which ought, certainly, to increase with the growing earnings of the people. Consider, lastly, the sum annually granted by Parliament, which, though it ought not to be recklessly increased, need not be diminished—at least, before other less popular charges have been lessened. Now, it would, I believe, appear by careful calculations that under these heads of endowments, voluntary payments and subscriptions, and the actual public grant, ample funds exist to maintain a teaching profession adequate to the full requirements of the case. But in order that the ranks of the profession should be filled from those classes of society which can afford to bear the cost of the preparation, a few necessary steps have to be taken which I will briefly indicate: In the first place, the public grants or endowments should be directed rather to pensions than to present maintenance. An eventual certainty or the reasonable chance of such certainty is the prospect that induces parents who have capital to invest that capital in preparing their children for one career rather than another. Make a schoolmaster's career more certain of ultimate reward, and more persons will enter it at their own cost. In the next place, provision should be made for making this ultimate pension depend on two conditions: first, proved qualification for teaching; and second, proved results of teaching; both of these to be ascertained and certified by public examination of the teachers and the taught. In this way, the real want which the nation is feeling might be adequately met, and at the same time the evils which attach to compulsory education might be avoided. Let me read to you the expressive words in which Mr. Lowe in his address just issued to the London University has put the case. He says: "The time has come when, if we wish to be well governed at home, or respected abroad, we must make education accessible to all. This can be done without any immediate destruction of the existing system, by establishing secular schools, supported by rates wherever voluntary exertion fails." I agree that "we must make education accessible to all." I agree that this can be done without any destruction of existing systems, immediate or future; but I am persuaded that destruction must follow, and with it many other evils, I know not how immediately, from the establishment of secular schools supported by rates; and I venture to think that if schools were left quite free, but encouragement given to teaching, and the results of teaching properly ascertained and rewarded, every family in England would find a qualified teacher so anxious to give elementary instruction, at the lowest rate, that if the children did not, for any reason, go to the school, he would look them up in their own homes. In this way learning and earning would be heartily co-operating; the teachers being themselves connected with the employers of labour would, while pursuing their calling, and fulfilling the requirements of their profession, under the guidance of the most enlightened public opinion, nevertheless not neglect, as is too much the case now, the application of their teaching to the requirements of real life. They would try to make their pupils better labourers as well as better men. They would have an intelligent regard to their future calling. They would listen to the remonstrances of their own fathers or brothers who would be testing in their employment the result of the previous learning upon the after-earning. On the other hand, they would themselves influence in the right direction those fathers and brothers. They would get them to understand better than now the true effect of mind upon matter, of the cultivation of man upon man's cultivation of the earth. It is through the employers that the true blessings of education can best reach the employed. Middle-class schools, colleges, and universities would produce, at the lowest cost, and with the least public inconvenience, enough teachers for all below them. I have the right to say "at the lowest cost," for I may lay upon your table, gentlemen, with some excusable pride, the report of the Directors of the Devon County School, of which I have the honour to be chairman. It tells

faithfully the actual result of that experiment up to the present time, and it will, I think, convince those who may care to peruse it that it is possible to provide an education of no low standard, and with no aggravation or evasion of religious difficulties (for Dissenters send their sons as freely as Churchmen) at a rate most moderate to parents, and yet so as to be self-supporting and to yield some interest on the capital. I would ask them to compare this result with that of any similar institution dependent on State aid, such as the Training College at Exeter. As regards the conduct of that institution, and the character of the institution, I am disposed to think very highly; but why should that college be receiving £2,000 a-year from Government to prepare about 50 masters for their profession, when we find parents in this and the adjoining counties prepared to pay to our institution the same amount, and when for that amount we are able to give a similar, though, of course, earlier education to nearly one hundred pupils? And why can we not (though we have tried) induce any of these parents who send their boys to our county school to send them on to that college where they are offered a further education gratis, and admission into a fairly paid profession? There must be something wrong in this state of things. Some other inducement than State grants, or some different distribution of these grants is necessary, to get the middle-classes, the farmers and tradesmen, to prepare their sons for the profession of teaching. But if that other inducement could be found or that different distribution made, I am justified in asserting, from the results and course of the experiment which I have for some years been promoting and watching at West Backland, that a system of public education might be soon formed, through which all the learning that the most advanced advocate for its extension could demand would be made accessible to anybody, without any interference with earnings or the addition of one single penny to the rates or taxes of the country. Teachers would be forthcoming whom duty, interest, and honour would combine to stimulate to an incessant conflict with ignorance, while many social ties would restrain them from any mischievous promotion of learning, to the detriment of that which is still better—earning.

Earl FORTESCUE said: For myself, I have long made up my mind that, except in the shape of reformatories for dealing with what I hope we may call the exceptional cases of perfectly unnatural parents who have no feeling at all of their duty to their children or to society—except in the case of these (as was well put by a very eminent foreign statesman and statistician), who are actually, or may be considered as, morally orphans—the system of compulsory education is most objectionable. I have seen with great regret that many of those for whose opinions I entertain very great respect (though I do not feel disposed to follow blindly or implicitly the opinions of any individual whatever; I only feel bound in important matters conscientiously to make up my mind as far as I am able myself)—I have seen with great regret the tendency to the advocacy of compulsory education. I think that it is partly the result of something like panic. Now, I think, speaking in my own neighbourhood, I may fairly claim the credit of at least being no opponent of education; for, during the last quarter of a century I have been in different ways doing what I could to promote it, and not to promote it among the lowest class merely as an eleemosynary effort—as an act of charity alone—but trying to facilitate its being independently acquired, at a moderate cost and of good quality, by the class of employers as well as the class of employed. But, though there are no sums which I pay with more heartfelt pleasure and satisfaction than those for establishing and sustaining schools in every neighbourhood with which I am connected by property—though no one is less disposed to undervalue the blessings of education—I think there is a very wide difference between contributions to its promotion heartily and freely given, and we may hope, in many cases at least, thankfully received, and its being grudgingly provided and thanklessly received. Lord Fortescue concluded by moving, "That the principle of general compulsory education for children at the expense of the community at large, and still more at that of the ratepayers alone, is unjust to the payers, as imposing on them the double burden of the education of their neighbours' children as well as of their own, and is demoralising to the recipients and their parents, as teaching them that the law absolves parents from the responsibility of providing for more than the bodily wants of their children, and as encouraging them to expect further

relief from that duty likewise. That such education, grudgingly provided and thanklessly received, would, unlike education either charitably provided or independently earned, tend to alienate from each other more than to unite the different classes of the community." His lordship had also prepared a supplementary resolution to the following effect: "That, religious instruction apart (for which separate provision has been made by the State), education, in the sense of a mastery over the elements of reading, writing, and ciphering, though highly desirable, is of less importance to the moral and physical well-being of the mass of the population than good industrial training; that the two are far from being incompatible; but, in so far as they may practically be found so, industrial training, as distinguished from excessive or premature or infant labour, should have the preference over schooling."

Mr. LANGDON seconded the first proposition, which, after some discussion, was put to the meeting, and carried almost unanimously.

Mr. JOHNSTON protested against their entertaining precipitately the second resolution, and said that if they gave in their adhesion to it without the fullest discussion, it would stamp the club with a character which he should not like to see given to it. Although they must all feel obliged to the noble lord for the great thought which he had evidently bestowed on the subject, his lordship had an advantage over himself and others who could not discuss the question with so much freedom as previous study would have afforded.

The PRESIDENT deprecated delay. The question was being discussed throughout the country; and if they postponed an expression of their opinion, it would be like passing an opinion on last year's Reform Bill.

Lord FORTESCUE said that he would not press his motion and it was accordingly withdrawn.

A vote of thanks to the President for his able lecture terminated the proceedings.

THE EDUCATION OF THE LABOURING CLASSES.

The members of the Shropshire Chamber of Agriculture met at Bridgnorth, to discuss this subject. The Earl of Powis who presided said, an extension of the existing scheme of education was intended during the present session, by modifying and extending in some measure the arrangements now carried out by the Educational Committee of the Privy Council. He thought the education of the labouring classes, especially in agricultural districts, was very necessary. It was said that Acts of Parliament intended for all England were generally constructed at the Home Office for the counties of Middlesex and Surrey; and it might also be said that the present educational scheme practically stopped short at boroughs and market-towns, and did not affect small agricultural parishes. In market-towns all classes—not only labourers and artisans, but also small shopkeepers and people of that class—had schools brought to their doors. Every town, or every parish into which a town was divided, was sure to have a school, where the children might go and get education at a very low rate, returning to their parents for their meals and at night; and if the small shopkeeper desired to have a somewhat higher education for his children, he had generally the means of finding close to his door a school of somewhat higher class than the ordinary parochial school, where the expense was not large, because it was only the expense of daily instruction, and not of board. In agricultural parishes, however, the whole circumstances were different. Take parishes of under 1,000 inhabitants. They might have seen it stated on various occasions, especially in some of the debates caused by the motion of Mr. Walter, the late member for Berkshire, who took a great interest in this subject—they might have seen it stated by Mr. Walter that even in such counties as Oxfordshire, Berkshire, and Buckinghamshire, though they were not divided and rendered inaccessible by the great hills which were found in this part of the country, there were parishes which were not able to get assistance from the Committee of Council, because that committee insisted on having a certificated teacher; and, of course, in many of these small agricultural parishes, where the number of scholars was very limited, they had not the means of raising a sufficient amount of money to attract a certificated teacher. Mr. Walter strongly urged, especially when the Committee of Council made the last change, that of payment by results, that if the inspectors saw the children could read, could write, could answer questions intelligently, and behave themselves in a manner to show that the school was properly conducted, that should be sufficient without the master's being necessarily required to have a certificate, because persons without one might be perfectly adequate for the small amount of teaching necessary in an agricultural parish of very limited population. The argument had been, that if they allowed uncertificated masters at all, in larger parishes education would be degraded, and certificated masters would not find employment; but he did not think that at all likely, because, in towns where persons lived close together and a larger number could be gathered, and where there was a mixture of agricultural and

commercial classes, of course a higher standard would be required, and it would be found necessary for the credit and efficiency of the school to have a certificated master. He thought the argument against meeting the necessities of agricultural parishes for fear certificated masters should fall away, was purely chimerical. They might as well have said, when beer-shops were established, that they would lead to the abandonment of hotels. The question of getting better schools in rural parishes was one which did not merely affect the education of the agricultural labourer. It was also a question of the education of a most important class which required more assistance from the Privy Council than it had hitherto met with—the class of farmers, of small agricultural occupiers—men occupying, say, from £30 to £200. Take the case of a parish four or five miles from a market town—how was a small agricultural occupier expected to send several children to a boarding school? He could not be expected to keep a teacher in his own house, and how could he get a reasonable elementary education for his children, but by raising the condition of the parish school? The parish school might teach quite well the elements of reading and writing to children, and it was much better for children to attend a day-school and be able to go home at night between the ages of seven and nine, rather than to go to a school of more pretension at a distance. The parents did not like to part with children at such a tender age; and it was better for them to live at home. Of course, the labourer had no choice as to a school. If the parish school was a respectable one, the children acquired the rudiments. They learnt to read and write, and do those few simple sums which were necessary both for the comfort of their own homes and the transaction of their masters' business; and really the age at which they naturally left school (ten or eleven) made it necessary they should have the rudiments of education thoroughly instilled into them within a reasonable time; and that, at the same time, made it quite clear that no danger was to be apprehended of their being unfitted for work by getting too much or too literary a style of education. At the same time, the children of the small occupier were able to remain at school one or two years longer, and to make a little progress in education, such as was applicable to higher classes, and get such an addition as would enable them to keep their position and fight the battle of life. He (the noble lord) did not think he could take a stronger instance of the parishes which required more facilities of education than they at present possessed than that of Mainstone, in which Mr. Botfield had property. Mainstone was partly in Montgomeryshire and partly in Shropshire; and the former part was separated by a hill, and a distance of three or four miles from the church and school. There were not more than three or four houses together; there was not even the nucleus of an ordinary village. He (his lordship) asked whether in a situation like that, and in others, on the Long Mynd, the Wenlock and Clec Hills—he asked whether there was any reason why the assistance given to the towns should not also be extended to parishes like that, where neither occu-

piers of land, nor the people whom they employed, were likely to get education without sending out their children to a boarding-school when they were too young. They need not discuss, that day, questions connected with the extension of provisions of the Factory Acts to children employed in agricultural gangs, because that system was wholly confined, he believed, to the eastern coast, the great arable counties of Norfolk, Suffolk, and Lincoln, and did not at all arise at present in this county. He thought the first point was to urge upon the attention of the Legislature and their representatives such an extension of the facilities given by the Committee of Council as would put country parishes in the same situation as town parishes—that of having a good school. Having pointed out these elementary points and difficulties, which appeared to him to lie at the foundation of a discussion of the question of agricultural education, he would now ask Mr. Botfield to address them (applause).

The Rev. GARNETT BOTFIELD said he was sure it was a great mistake to suppose that the farmers as a class were opposed to education. They were very likely opposed to education which unfitted a boy for his walk in life, or to a system like that brought forward by Mr. Fawcett, because they thought it inapplicable to agricultural districts; but when he attended the Central Chamber, as a delegate from Shropshire, he found a unanimous feeling in favour of giving education to all. That such was the opinion of this Chamber he hoped to show by the adoption of the following resolution: "That it is the opinion of this Chamber that a good, sound practical education should be placed within reach of every child in the land." He thought they must all admit that at present the education of the labouring classes was not satisfactory. The present system did not reach many of the smaller parishes, as the noble lord had pointed out. He (Mr. Botfield) was sorry to see from the inspector's report for 1865 that there were still large districts in Shropshire altogether unaided by the Government grant. In the southern division, in the parallelogram of 460 miles, there was but one school receiving an annual grant, and the same state of things existed, though in a smaller district, in the north. There might be schools supplied by voluntary contributions, but he feared the truth was, that from some cause or other education was at a very low ebb in those parts. He knew from experience that in many places, from various causes, there was great difficulty in providing education. Amongst other causes, there were a few people still existing who did not believe in education. They said they could get no good servants now; the working man was so independent, he wanted more wages and more leisure, and he was not half so good a servant as before there was so much education. And they talked of the good old times when servants and labourers were ignorant, and knew and kept their places. But a little calm consideration would show the futility of such remarks. The labour market was, like other things, ruled by the law of supply and demand. The price of labour had increased, and the independence of the labourer, because the demand had grown faster than the supply. Formerly it was difficult for servants to get places, and therefore they kept them; they could not then jump into a train and carry their labour where they liked. Now, however, with the abundant demand, servants could leave situations which did not satisfy them and be sure of getting others. Education might make them somewhat more sensible of their advantages or fit them for labour for which otherwise they would not be fit, but those considerations were counterbalanced by the good habits instilled at school. They might safely conclude, he thought, that education did not interfere with the supply of servants. In fact he found that it was the ignorant girls who left the country to go to large towns—girls who were not prevented by that desire to preserve good conduct which schools instilled. He might say more on this point, did he not feel that all present would agree with the resolution. Then came the questions, How should education be provided? Should it be compulsory? How should it be paid for? Should it be conducted by certificated teachers? Would the half-time system suit an agricultural district? Such were the questions which they had to consider, not upon an occasion like this when they could not go fully into the question, but gradually and at future meetings. Should education be compulsory? Compulsory education was not likely ever to be a favourite system in England, but he did not hesitate to say that where education was not provided there should be some means of

supplying it. They could not fail to see that, in spite of many shortcomings, education had made rapid strides within the last few years. Now, would it not be better, instead of setting aside the machinery which, all admitted, had done some good, to try to improve and extend that, rather than introduce a compulsory system, which, to say the least, was extremely repugnant to English feelings, and which might have disadvantages not at present anticipated? Still, if voluntary efforts augmented by grants did not do the work, he was ready to grant that recourse must be had to authority. Then came the question, should they have certificated masters? He would say, yes; and he found that there he was at variance to some extent with the noble lord. But if he bought silver he liked to see the Hall mark upon it, and if he bought a horse he liked to have it passed by the veterinary surgeon; and so with a schoolmaster, he liked to have a certificate that he was fit for his work. There was no person to whom he should like to see the education of the smallest children entrusted who could not get a certificate. He knew there were many good teachers who had no certificate, but he thought, as a matter of security, it should be required. The fourth-class certificate could be obtained by any fair pupil teacher. When they considered the duties of a schoolmaster, and the influence which he exerted on children, an influence to last through life, they would see the importance of getting proper men. Then there was the question, how the cost was to be met. These were matters of detail, and as the subject would soon come before the Legislature, perhaps it would be better to wait and see what would be proposed. He did not pretend to have any decided opinion on the subject, except that he thought that a perfectly free education a great mistake. The parents of the poor had a duty incumbent upon them to find instruction for their children, just as others had, and any plan that seemed to say they were freed from that duty would rather tend to degrade them, he thought. Next came the inquiry whether the proposed half-time scheme would answer. He was sure, although it might do for towns, it would never do for the country. At present he did not quite see how they could secure that all children should be instructed before they were employed. Probably the different habits of different districts would have to be met in different ways. In Cheshire, for instance, there was less difficulty in keeping children from work than there was in Shropshire, because in the latter county boys were so much required in the fields, and in the former they were not much needed. It might be interesting to know that children under eight could earn 4s. a-week in the northern counties, and the earnings of children between eight and fourteen, in six counties about Gloucestershire, amounted to £360,000 per annum. He mentioned these things to show that parents must make a great sacrifice to let their children go to school. From what he had said they would infer that he advocated giving the agricultural class education, and the best that could be obtained; and now he was prepared to hear it said, if you give such a good education to the labourers what is to become of the class above them—the small farmers and shopkeepers, and indeed the great middle class? That was an objection he had always felt very strongly; and in his reply he thought he should be best bringing the matter before them by giving an account of the school he was connected with at Bunbury, in Cheshire. When he went there twelve years ago—he must say, however, that he then was very well acquainted with the district and knew most of the farmers, and he believed they had some little confidence in him—when he went there, there was no school worth the name. There was an old endowed school, the proceeds of the endowment of which were now £40, and that endowment was the greatest nuisance he had to contend with. When he asked for money the people replied, "You have a free school." Eventually, however, he got the endowment legally revised and a good school established, and he engaged a schoolmaster from Welshpool, Mr. Bayley, whom he considered the best in the kingdom. If people were really too poor to pay, their children could be admitted free at the discretion of the visitor; but though there were two or three applications at first, for twelve years there had been no application for a free admission. The next class was that of the children of agricultural labourers, admitted at 2d. a-week; then small farmers, 6s. a-quarter; and next, large farmers and tradesmen, 10s. a-quarter, which was the highest charge. There was an endowment at Bunbury, as he had stated, and he did not say farmers' sons could be admitted to such a school

for 10s. if it were unendowed, but they could for £1. Doubling the fees at Bunbury would have made the school self-supporting. At that time he was not very rich. He was a clergyman with children, and he said he would establish a school good enough for his children, and then it would be good enough for farmers and labourers. Some of his children went to that school, and he would say, as far as education went, though he was now paying for each of them more than the master at Bunbury received for teaching 120 boys, they were better taught there than they were now. A dame's school might teach the children up to eight or nine; and then, when they were older, they might go to Bishop's Castle or Clun. It was his experience that distance did not keep scholars away. They came to Bunbury readily from as far as three miles; and he remembered the case of one boy who lived nearly four miles off, and who had been absent only a part of a day for twelve months. Then, he would say, engage the best master you can; and don't be too niggardly as to salary. Referring again to Bunbury, he offered the master £90 to move there, besides certain fees. The master had boarders who paid to go to a school where the labouring classes were admitted. Merchants' sons, from Liverpool, and clergymen's sons, were there. He (Mr. Botfield) did not advocate keeping farmers' sons at a school of this description till they were sixteen or seventeen. If they could be kept at school that long, there were excellent schools, established specially for farmers' sons, to which they might be sent for about £30 a year. He advocated admitting middle-class boys to the elementary school; they would get a far better education than at half the private academies, and at less than half the cost. He thought all such schools should be perfectly unsectarian, especially in agricultural districts. The original endowment at Bunbury provided that each child should attend service on Sundays and holidays with his service-book. He had it altered, so that the children had on Sunday to attend some place of worship selected by their parents. The master regularly inquired on Monday morning whether he had attended a place of worship; and the plan worked well. Dissenters had found difficulty in sending their children to the school; and no objection had been raised to learning the Church Catechism. Of course the children of Baptists were not required to learn about godfathers and godmothers, for, since they had none, that would be absurd; but other parts of the catechism were willingly learnt. The Bible was well and regularly taught; and the religious knowledge and moral tone of the school were excellent. Schools should be used for purposes of education, and not for proselytizing.

Mr. J. MEIRE was quite satisfied with the resolution. All ought to have that education which suited their condition in life; and he believed the question of education would be one of the most important that would be brought before the country for the next two or three years. Their members had a very good reason for their absence in the meeting of Parliament, but he might state that Mr. More had telegraphed to say he was sure all of them would be present if the discussion were adjourned to Easter. His (Mr. Meire's) experience of the agricultural labourer was, that those who had learnt to read and write were not worse, but, generally speaking, as good or better than others. In the present progress of civilization among all classes, it was their bounden duty to take care that the body of the people should have that amount of education which would make them more happy in themselves and more useful to those who employed them. In one point he differed from Mr. Botfield. He (Mr. Meire) thought all property should be assessed for the purposes of education on the basis of the income-tax, not going below that. Property that did not now contribute towards poor rates, such as mines, woods, &c., should be brought in. The plan was so direct and so simple, and would bring in such a fund, that he felt sure very few connected with the cultivation of the soil would object to pay their quota. He did not think district schools, such as Mr. Botfield had referred to, could yet be established, though they might be very useful in the future. If labourers' children could be taught to read and write, and do the first simple rules in arithmetic by the time they were ten, and then have a certificate and get a right to assist in maintaining their parents and brothers and sisters, it was all they could expect. The

life of a poor man was a very hard one. In many villages the schools were supported by the squire or the clergyman, and not by the agriculturists. He thought it was a hard thing for the clergyman to have the school put upon him; and such a rate as he had proposed would, it seemed to him, be the best system.

Mr. BOTFIELD, referring to the question of boys being unfitted for their work, said during the twelve years there had been no instance of a boy attending the Bunbury school leaving his legitimate work. Some boys who were exceedingly poor and miserable, and who would otherwise have been a burden to the parish, had been educated and got good situations. One was a clerk in Liverpool, getting over £100 a-year; and another a station-master at an important station.

Mr. MEIRE: And we have lost a labourer.

Mr. BOTFIELD: No, he would not have been a labourer in any case.

Mr. WYLDE BROWNE said it seemed to him the great question was, should education be voluntary or compulsory? They had tried the voluntary system, and, alas! they knew the results. One of the great evils of the voluntary system was the want of continuance. If a child went to school, say three times a week, his education was thrown away, and he was turned upon the world at last a sort of educated savage. Many complaints which he had heard of children over-educated had grieved him much, for in every such case he could trace the evil to a want of education, and the neglect of parents in not giving their children the education which they might. It was said that many turned out so fine, they would do nothing. That was not a proof of education, but the want of it. They had not been taught obedience and subjection to those that were above them. He did not ask that they should be put in a position which God had not put them in. He wanted the child taught its obligations, and fitted to fulfil its duties to its employers. He wanted to see the child placed in that position in which it would carry out the abilities which God had given it, to the end for which they were intended. The parents had not had education themselves, and therefore did not appreciate it in their children, too many of whom had to be sent to a reformatory, to learn what they had failed to learn elsewhere.

Mr. H. SMITH (Sutton Maddock) said it had gone the round of the papers that he said the farmers did not wish their labourers' children to learn, and that the sentiment was cheered by 300 farmers. He thought that one and all would agree with almost every word that had fallen from Mr. Botfield. There was one thing Englishmen would always recoil from—compulsion. One point for consideration was, whether it would not be possible to do something towards meeting the cost of extended education by a reform of the endowments existing all over the country; and there was only one other thing to which he wished to call attention, and that was the opposition given to Mr. Fawcett's proposal to compel children to remain at school till they were thirteen. In many country districts it would be impossible to maintain such a system. Suppose wages were raised from 12s. to the almost impossible 15s., even then if a man had several children it was hard work for him to spare them when they might be earning 3s. or 4s. a-week. Then again, he said it was utterly impossible to have the half-time system. Could not something be done by night-schools? Some people said the lads were too tired with their day's work to attempt to gain instruction at night. He said they were not too tired to play at tip-cat and other games, and therefore they might go to school if they wished.

Mr. ATCHERLEY said as so many wished to express their opinion on this important subject, and as one of the members had telegraphed to say that he hoped he and the others would be present if the discussion were adjourned, he begged to move that the debate be adjourned to Shrewsbury, to a time to be fixed hereafter, probably about Easter.

Mr. J. MEIRE seconded the motion, and said he hoped many from that district would attend to discuss so important a subject.

The motion having been carried, a vote of thanks to the noble lord for presiding closed the proceedings.

THE ROTATION OF CROPS AND CROPPING CLAUSES IN LEASES.

At the last meeting of the Morayshire Farmers' Club, Mr. GEDDES, of Orbliston, said: When we look back to the period that the present restrictive clauses were introduced, and to the state of agriculture then existing, there can be little doubt but that such measures were necessary for the benefit of landlord and tenant; because agriculture was then little understood, and green or cleaning crops were not known, the farms being divided into what was called old in-field and out-field, the practice, as I have understood, being to crop the land so long as it would produce anything in the shape of corn, and then to let it remain fallow, or pasture, till such lapse of time as the ground recovered itself for a fresh series of corn crops, applying any manure made on the farm to the old in-field, and folding the cattle and sheep on the out-field. With the introduction, however, of turnips and other green crops, and more particularly artificial grasses, and the use of lime, it was seen, by the more enlightened agriculturists, that a new system of cropping, based on the alternate rotation of corn, green crop, and grass, proved more remunerative than the former practice, and, in order to compel those who were not willing to advance, cropping clauses were introduced, the wisdom of which at that era cannot be questioned. Matters, however, are now greatly changed, the commencement of which change may be said to have taken place with the introduction of bone dust, and latterly by the innumerable artificial manures and feeding stuffs in daily use among us, and for which we pay frequently as much as we do for the annual rent of the land, and on most farms a large proportionate sum to the rent. My object is, therefore, to show that, with the changes which have taken place in consequence, the restrictive system of cropping which now generally exists will not be found to be the most advantageous for either landlord or tenant, for I hold, as a general rule, that what benefits the one must benefit the other in the main. I am of opinion, therefore, that to give the full benefit of the advantages which we now possess from auxiliary manures and feeding stuffs, it is necessary that there should be more capital thrown into the land, and more scope given to the intelligence of the tenantry to work out that capital. The change in the ideas of the tenantry which has taken place, in preparation for this, within the last twenty years, has been something very remarkable. It is not confined to one class of farmers, but pervades generally the whole body of the tenantry. You have the small farmer, and even the crofter, occasionally introducing more capital and skill per acre than his larger neighbour, which, to the eye of the practical man, is very evident at a glance in passing their respective occupancies, showing that the various branches of his business are practised in a superior degree. You find almost every person now alive to any recent improvement, whether in cultivation, machinery, or management of live stock: and all seem to be desirous of making as much of the land they occupy as they possibly can. I observe, moreover, that as intelligence gains ground and light begins to dawn upon us, a general feeling prevails that, from the restrictive clauses in our leases, we do not have that fair play or fair field so necessary for the full development of the resources of the land. My own feeling in this respect gains ground with every additional year's experience. In the first place, I am satisfied that land, however well cleaned and manured, tires of the same continued round of the mill, and that under the same, or a more liberal system of management, it does not produce so abundantly as formerly. I have this belief daily confirmed by practical men. They tell me that, notwithstanding their doing better by the land, yet their returns are not equal to what they used to have from the same fields. You likewise hear from others who, by their leases or by tacit consent, have more liberty in cropping the land, that the more they diversify the crops, provided they hold on the manure, the more produce and the more profit they have. As most of you are aware, I hold different farms from different landlords, and I have had, in the course of my time, charge of a good deal of arable land, where different systems, owing to different situations and soils, were pursued; and during all that time I have found that the

more I varied the system of cropping, the more productive the land became, providing I kept manure going in it, and kept down the weeds. I have on other lands, where I am confined to a five-course shift, found great loss and inconvenience from the fact that often during a wet and unpropitious year for cleaning, I have not been able to extirpate the weeds, and have been obliged to put this land under a grass crop next year in a foul state, laying it down to grass for the two subsequent years, and with these weeds fructifying and increasing till the next cleaning rotation came on. You may easily fancy (and I dare say, a good many of you have experienced) the state the land was in, and the sort of crop I had on breaking up, while the weeds, instead of the grass and grain crops, had possession during the four anterior years. If I had not been bound to farm this land on a five-course shift, I need not tell you how I could have avoided all this, and how I could have brought it under an earlier cleaning, rendering it profitable to me in the one case, instead of an actual loss on the other—and if a loss to me, a loss to the landlord probably, because, as matters stood, the land was deteriorating; while, on the other hand, it would have been, under my system, enriched. Again, I have seen, from a dry seed-time and season on light and strong land, the artificial grass seeds fail; and, of course, the weeds got possession of the ground, especially on the light lands, where, unless we keep them down by crops and cleaning, the land will get foul, whatever the manurial state. In a case like this, if I had had my own way, I could, with the assistance of the unlimited command of manures which we possess, have checked the disastrous loss in the next season, and this without detriment to the land; but, on the contrary, as I believe, to its ultimate advantage. But here I am at once checkmated by the cropping condition in my lease. On other farms which I occupy, and where I am not so strictly bound, I have some small detached pieces of my poor sandy soil, wherein I have grown very successfully potatoes and turnips every alternate year with a grass crop, now and then of rye, intervening, taking the land out of what was meant for pasture grass, making potatoes of it, followed by a turnip crop, or by first taking turnips, eating them on the ground by sheep, and then making potato land of it, and perhaps then afterwards risking a crop of rye, and by so doing I have made them the most paying acres of the farm; while if I had farmed them upon the usual five-course shift I might, during the recent dry seasons, have been able to take a quarter of oats or barley of the acre instead of £15 or £20 for potatoes, and £5 to £7 for turnips. I mention this as an illustration of how land may be turned to its proper uses, and how foolish and absurd it is to persevere with any system not adapted to the soil, situation, and climate which one has to deal with. The curious anomaly in these restrictive clauses in leases and cropping regulations is that often one uniform rule is adopted for all farms—that is, whether they be strong clay, or light turnip land, or any of the intermediate descriptions of soil, and whether situated in a low-lying and fertile district, blessed with a good climate, or in a high and mountainous country, with an unpropitious grain-growing atmosphere. These regulations you will find over large estates, and where the land, whatever its particular requirements, will not be let otherwise than subject to these conditions—that is, whether it be for the good or evil of the management, the same system must be pursued. Now, when you consider that it is the interest of every tenant, and is generally understood so by them, to keep his land in as high a state of cultivation as it will bear, to make it profitable to him, my impression is that he ought to be allowed to exercise his own judgment a little more, and be permitted to throw his capital as freely into it as he chooses for the full development of the resources of the soil; but you cannot expect him to do this if he feels himself fettered by clauses which will not enable him to redeem this capital, thereby preventing him from doing good to himself, to his landlord, and to his country. I am the last man to argue that a landlord has not the most perfect right to guard himself against loss and fraud by a bad tenant, but it does appear to me to be no difficult thing to

frame cropping clauses in leases, whereby at any period of the lease no damage could accrue to the landlord if the tenant could not carry on, or, if the landlord so desired it, the tenant, without detriment to himself, could be bound to leave his farm in any ordinary rotation he, the landlord, deemed best, or he might have his farm in this state for the last few years of his lease. Some of my friends among the most successful farmers of the country farm their own land, and others renting land have more liberal clauses in cropping than those generally in existence; and I have seen those gentlemen practise deviations from what is called the usual system of husbandry with the most marked success, in all cases leading to much more liberal management, increasing the manurial condition of the land, and affording more labour to the people. I shall only allude in passing to the general complaints one hears of the land getting sick of clover, or the turnips being cankered and diseased, all of which are attributed generally to the too frequent repetition of the same sort of crops without a sufficiency of the alternate system. My opinion is that the next generation of agriculturists will view with wonder and astonishment how we could have gone on pursuing the same systems, so long deteriorating or retarding the fertilising of the soil, keeping down the value of the land, and preventing the free flow of capital into it, and, if I may be allowed the expression, curbing the intelligence and enterprise of a tenantry who have brought the agriculture of this country to its present high position, and who, if they get fair play and freedom of action, are calculated still to go farther, and invest not only their £10, but their £15 or £20 per acre, if they see it to their advantage to do so by a probable chance of a return. In proof of what I have said, let me point to the Lothians, where a system of liberal management prevails which we hardly know hereabouts. I do not mean upon those farms lying in the immediate neighbourhood of Edinburgh, but those situated at distances which prevents their occupiers taking advantage of town supplies. Their cropping clauses are liberal, and the application of manures liberal, and you have rents paid and capital expended which we have but little idea of; and yet over many parts the seaboard of the Moray Firth we are not much behind in point of soil, and certainly none in climate. My impression is that if more freedom and scope in cropping was given to the intelligence and enterprise of our tenantry, there would be exhibited a larger flow of capital into the soil, a larger produce, and consequently that higher rents could be afforded, and that by so doing you would benefit the landlord by an increased rent, you would benefit the tenant by the larger proportionate amount of produce, and you would benefit the country by the larger employment of labour and increased abundance. If there be any truth in my sentiments, the day is not very far distant when it will be exhibited; and it is gratifying to me to think that many men now engaged in the letting of land are showing, by the conditions which they are entering into with tenants beginning leases, that they estimate the more liberal system which I consider necessary for the continued progress of agriculture. Circumstances are fast changing around us; and those who have been farming for not many years cannot but observe the effect that railway communication is causing—giving us facilities for carrying on our business by personal locomotion and communication with other parties and places, by the immediate and convenient transmission of our live-stock, our grain, and potatoes, and by placing us in a position with relation to all these, and much more which we did not know before. Then, why should not full effect be given to those advantages? and why should landed property have an incubus upon it which can so easily be removed, but which, while it lasts, retards its value, and entails an evil on all connected with it? In confirmation of my views, I would quote what the late Sir John Sinclair said: "If men were uniformly distinguished by knowledge and integrity, covenants would not be necessary. In general, however, the covenants in leases are too numerous and too complicated. Unnecessary restrictions are a great impediment to improvements, by precluding the spirit of enterprise and experiment, which has proved the principal source of new discoveries and prosperous agriculture; also, to prescribe an invariable mode of cropping for a whole lease is generally absurd and injurious, and always ineffectual in promoting improvements." Then, Mr. Dickson, of Saughton Mains, one of our best authorities in these matters, and whose advice is more taken than perhaps any land valuator in Scotland, stated, at a

late meeting of the Chamber of Agriculture: "As to cropping, I think it desirable that the cropping clauses should be put in the negative form—that is to say, that the tenant should not have less than a certain extent of his land in green crop and grass, and not more than a certain extent under white crop, during every year of his lease, and at the expiry of which he shall leave the same under a certain fixed rotation, as the case may be." These sentiments I quite coincide in, and think them ample for both tenant and landlord in most cases. This principle has guided myself in advising those gentlemen who have consulted me, and I could point out various farms in this county, which have been worked under liberal clauses in cropping, and where it will be seen they have not been abused, but, on the contrary, both the land and the tenant have thriven. I am aware of the practice of one gentleman in particular, whom I shall take the liberty of naming—viz., Mr. Kenneth Murray, of Geanies, and who, perhaps, has more to do in advising the letting of land than any man in the north of Scotland. He tells me that in every case he has to do with, the circumstances of the farm in question are considered by themselves, and special terms fixed, according to the nature of that farm, and in every case the cropping agreements are of a very liberal cast towards the tenant, and negatively put, like Mr. Dickson's. It was only the other day I understood that the letting of a large arable farm in Ross-shire, where the rent exceeds £1,000 a-year, was done upon the principle of allowing the tenant to crop as he chooses till within the last six years of the termination of the lease, and this was done by what is called a small landed proprietor, and one who is himself a thoroughly practical and highly successful farmer. In conclusion, I would say that the best security a landlord can have is the character of his tenant. Let him be particular in choosing the right sort of man, one possessed of capital sufficient for the land he proposes to take, and whose character for skill and industry stands high. If he gets such a tenant, the clauses of his lease may be very few indeed. On the other hand, let it not be supposed that laying down in a lease any number of complicated clauses will preserve the condition of the farm with a bad tenant. He will ride through them to its destruction, and yet keep within the law, and if he at all knows what he is about, will so use some of those very artificial manures for the impoverishing instead of the enriching the soil. It is quite true that, by pursuing such a course, he may do no good to himself, but he will manage to tide over a few years, which perhaps is all he looked for.

Mr. McKESACK (Ardgye) said Mr. Geddes' paper was really perfection in itself. It threw a new light upon the way that land should be farmed. He quite agreed with all that Mr. Geddes said in that paper. He quite agreed that so long as the farmers were looking to their own interests, and the good of the country, they would alter the form of cultivation to the circumstances of the land—at least in this part of the country. It was quite absurd that a farmer upon light and strong land should be restricted to one system. He thought Mr. Geddes' paper would do a great deal of good throughout the whole country, and they were very much indebted to him for bringing forward his views.

Mr. YOOL (Coullartbank) quite agreed with what had been said. Personally he was not so tied down as Mr. Geddes seemed to be in some of his occupations. When a proprietor ties down a tenant to certain clauses, he injures himself as well as the property. No tenant could be expected to pay a large rent, unless he was allowed to take all he could out of the land. It was perfectly absurd for a proprietor to lay down to his tenants but one rotation. It was quite ridiculous to pretend to crop heavy clay land in the way they would the light land of this country. He thought every farm should stand on a footing of its own. In the first place, every proprietor should find a good tenant, and by all means let him crop the farm in any way he likes during the greater part of the lease, although during the last five or six years he should reserve the right of having it placed on a proper system, which would prevent a state of things which might prove very good for the present tenant, but would prove very bad for the proprietor and succeeding tenant. If a tenant got a good proprietor, he ought to be quite willing to become bound down to a fixed rotation at the end of his lease. He hoped Mr. Geddes' paper would go abroad, and do a great deal of good.

Mr. HARRIS (Earnhill), as a tenant, rose to express his thanks to Mr. Geddes. He hoped the landlords would take

his good advice. No man upon the spur of the moment could properly comment upon or reply to such a paper; but he was quite sure that the tenantry would be thankful to Mr. Geddes for having read such a temperate paper, for it would commend itself as much for its temperance as for anything else.

Mr. COOPER (Spynie) quite agreed with the most excellent and exhaustive paper which had been read. The subject had been before the public to a greater or less extent for years back; and he had little doubt but in the course of a short time the views now expressed would be very generally adopted. It was really the interest of the proprietors to grant liberty to the tenants to farm as suits the land and the times. He might merely mention, as an instance of what might be done with more freedom, that for several years some parties gave over the cultivation of wheat; but prices advancing, there was a greater breadth of it cultivated. If they adopted the more liberal view in cultivating green crops—potatoes and turnips—it would be a very great benefit to the farmer.

Mr. ROSE (Sheriffstown), as a tenant-farmer, agreed with every word Mr. Geddes had brought forward. He hoped this paper would go over the length and breadth of the land.

Mr. HARRIS suggested that the club should pay the cost of printing the paper, and take any steps which would tend to its larger circulation over the country.

The CHAIRMAN: I suppose that recommendation is unanimously agreed to.

Mr. GEDDES said his object in writing the paper was to bring the matter before the landlords as well as before the tenants. He was quite satisfied, from what he knew of their landlords, that if they had the right information on the subject, they would work upon it at once. But if the proprietors did not know the feeling of the tenantry, how could they act so as to meet them? If they did not know the circumstances, how could they take action regarding it? He had told the way the land was now being let in the advanced districts of the country; and why should they, who were not, be thought, behind in any way that he could see—why should they be so crippled as they were occasionally in obtaining land? It was more for the advantage of the landlord that he should give these liberal clauses than it was for the tenant to have them, because the tenant's interest was only a temporary one. And if the proprietors would only give these liberal clauses—which he and they all thought necessary for the land—it would increase in value, and they could afford to give more for it. At the present moment, by putting these restrictive clauses in their leases, the proprietors were neither more nor less than putting money out of their own pockets.

HOW TO EXTERMINATE THE THISTLE.

I have heard of timid farmers, quitting their homesteads round Fort Erie on account of the invading Fenians; and I have heard of farmers quitting their homes (or rather driven from them) by the bold and still advancing enemy, the Canada thistle.

Peter Shisler recently favoured us with his methods (also his experience) in the 1st of November number, which, taken in connection with the first of this year's issue, offers a good opportunity for fair criticism. In the first number, the aid of the steam-plough was enlisted to do battle; but, in this last case, Peter Shisler drops this potent power, and is content with the cavalry plough, which, for all plans of a wholesale character, is the only one thing needed. The expense of ploughing for a summer-fallow, say four times, 4 dollars per acre, cultivating, harrowing, and rolling, say another 4 dollars, and all to get rid of the thistle. I will now propose a system entirely opposed to ploughing or fallowing; for, by observation, I feel certain fallowing is, and has been for many years, the most certain and infallible way to propagate the thistle by wholesale; for that state or condition of soil which, under the effects of fallowing, makes a good seed-bed for wheat makes also the same for the thistle, and at exactly the same time; for, at this time, we frequently see (like a little summer snow-storm) the thistle with its downy wings floating in the breeze, and settling on the fallow. Some of this seed is ploughed in, some harrowed, and some remains upon the top till stripped of its wings; in any case, it seeks no better home. Old meadows in England have had their patches of thistles for (perhaps) more than a century, and they never seem to increase; but how widely different is the case in arable lands the fields of the Canadian farmer can sadly demonstrate.

In looking over "London's Encyclopedia," I find some very interesting and instructive information respecting the numerous species of the thistle tribe; and the Canada thistle, as it is now called, has its full share of remark. One experiment was made by planting a slip in a garden in the spring; and in the fall it was carefully dug up, the roots collected, washed, and weighed. They amounted to five and a-half pounds; but, with all the care to collect all the roots, sixty plants sprang from pieces unseen. Then, again, the plant has been known to send its roots down nineteen feet; and some say much farther. It delights to grow on ploughed fields; and, according to London, the best way to subdue them is to lay or seed the land down with grass, and then to cut them off continually for six or seven years; and this plan is recommended as far better than ploughing, &c. Now, before the steam ploughs can be brought to bear upon this question generally, should we not look ahead for thirty years? Then, taking

London's seven years, and the steam plough's thirty, I would ask, "Is this seven-and-thirty year system satisfactory?" The thistle is in every sense a perennial. It does not often flower the first year, unless the seed vegetates early in the fall. Now, if we watch its growth, maturity, and decay, we shall find that here, as with other perennials, a provision of organic matter has been stored in the roots for the reproduction of newly formed shoots and leaves. If we carefully remove the soil from the collar of the plant, we shall find a healthy spike, some one or two inches long, to remain dormant till spring, and if we examine the asparagus in like manner, we shall find the same provision at the base of each matured stalk, but in greater numbers. These embryo buds are exactly analogous to buds on the branches of trees. Now, if we can ascertain to a certainty from whence these buds (either above or below the ground) derive their formation, we can then, by removing that cause, destroy any plant or tree.

I have heard men that have been assessed at 12,000 dollars a-year, and whose matured age is indicated by grey locks, speak gravely on this important question thus: There is a time (an exact time) in the age of a certain moon, but they are not quite sure which day or hour, or whether it happens by day or night, when, if they are cut down, they will surely be killed. Other men of like age will stand with forced arms look contemptuously. If you ask why they grow so many thistles, and tell them they can be destroyed as well as cultivated, they will reply in this wise: "Don't you think to tell me anything about thistles; I tell you they can't be killed. I have now cultivated this land turned forty years, and they are just as bad now as ever, and I think a little worse, and I have tried all sorts of ways and find it no use, and I have left off for years bothering myself about them." This class of men can only be convinced by actual demonstration. Let me, then, endeavour to convince one and all that the process of exterminating thistles in ploughed fields is much easier and more certain than has hitherto been generally admitted, and instead of losing 8 dollars per acre, besides a year's crop, the farmer shall be convinced that he is a clear gainer by adopting such a process. Peter Shisler speaks of three ways that have proved successful: First, cutting off below the surface so as to leave a hollow, which will cause them to rot; the second is to eat them; the third is frequent ploughings. The latter plan has been shown to be the principal if not the only way to rapid extension; while it occasionally destroys the old stock, it ensures a more numerous young one. The second is to pickle them, which as soon as proposed is abandoned by reason of its inapplicability. The first is the correct one to meet all cases, including that of thistles growing round stumps, like

fences, &c. To make it clearly understood, the writer should have stated at what time or times this operation should be performed. I will endeavour to supplement this defect.

The writer of the steam plough remedy mentions one plan that will not kill them—namely, that “you may hoe or cut them off ten times without effect.” Here we have two plans brought forward—one that will, and one that will not kill the thistle. Peter Shialer, I think, is astray when he says the subject of his letter has become almost threadbare. It will be time enough to drop the subject when we see field after field stripped of this invading scourge as fast as we now see them taken possession of. This year I have seen crops of grain, the bulk of which has been made up fully fifty per cent. of thistles. Permit me to give the results of my limited experience, and to indulge in the hope that it may be useful to younger men, and, perhaps, even to the aged and grey-headed. To exterminate either weed, useful plant, or tree, I am persuaded the most effective method is the exhaustive principle, reduced to simple practice. During the first spring of my residence in Canada I planted about four hundred rhubarb plants, and by August following they had attained a large size and vigorous growth. An old female neighbour came to make some purchases, and passing this particular plantation of rhubarb, she at once drew up, and in an earnest, but friendly manner, requested of me to pluck it, and take it to market and make something of it, as the frost would come by-and-bye, and destroy it all. I demurred, but she insisted. I said, “What shall we do for a crop next year?” She replied, “It will grow again; I have some roots this year, and I have plucked the last leaves off this very day.” After the growing season had commenced next year, I asked my kind adviser how her rhubarb was growing. She replied, “Ah, man, it never grew any more.” Last year I cultivated a piece of mangold wurtzel for a farmer, choosing as foal a piece of land for thistles as Canada can exhibit. In starting, I said, “Now if this simple process of mine annihilates the thistle what will you say?” “Say,” he replied, “why, that it is effectual; but I don’t believe it.” I saw him this fall, and without asking him, he told me that not one thistle has made its appearance since. I had applied the exhaustive system, and fully succeeded. Last year, also, a young farmer asked me to go with him to look at a piece of carrots. I found it an excellent crop, and about two inches high; also a perfect crop of thistles about fifteen inches high. They had been neglected for want of time. He then took me to another field where there was growing a crop of early potatoes, telling me this piece of ground was quite as bad as what I had seen; yet here there were no thistles. I inquired how he had managed. He said he had to keep the ground hoed down to save his crop. I asked if he allowed any of the tops of the thistle to ripen; he said No. Now, this young man had no idea that hoeing them had destroyed them. Twenty years ago there was an interesting subject discussed in the *Gardeners’ Chronicle* (edited by that master-mind, Dr. Lindley). The subject was, the Brake-fern. In a district of England there was a common, on which the native crop consisted principally of the brake-fern. This plant yielded every fall, when ripe, a crop for bedding for cattle, &c. The demand gradually increased. Different parties (to secure their supply) began to mow them before they were ripe, and this continued till they effected the destruction of the plant, and so cut off their supply, without knowing the reason why. So in like manner if you mow off the asparagus stalks just as they have attained their full growth (say, at the end of August), it will not live to bear the second repetition, because the source whence the supply of newly-organized matter comes is removed, and no buds are formed around the base of the stalks.

Since reading of the destruction of the brake-fern I have experimented (and doubtless thousands of others have also) on some of the most obstinate of weeds, and find no weed, plant, or tree, that will not succumb to the treatment of only removing its green leaves. Take, for instance, a seedling of any of the Brassica tribes, as turnips, and remove its first pair of leaves, and you at once destroy the plant. Although the roots are perfectly healthy, they possess no power or faculty of preparing any food even for their own extension. But when the bulb is formed, they will put forth, and bear the removal of many leaves; yet the end is certain—namely, exhaustion. There are many plants, the roots of which take much more time to exhaust of their store of organic matter than the thistle; for

instance, parsley, cloves, horse-radish, couch-grass, brake-fern, and the common dock.

The thistle will always yield most readily to the following treatment: Grow it in the shade, where it will be compelled to elongate (but deprived of the power to elaborate), and so exhaust the root of its store. But first, let us glance at the farmer’s ordinary routine of operations, and see how unerring and successful he has been, and still is, in propagating this bold, undaunted, and dangerous invader; then by reversing this routine, see if it cannot be expelled. The farmer’s usual practice is to put in his winter wheat on fallow ground, and, as aforesaid, no better preparation could possibly be made for the propagation of the thistle by seed. The next misfortune follows as a rule, almost without exception; timothy is sown with clover, or timothy alone, and this ensures only once mowing, generally about the middle of July, just when the thistle is matured; and although the seed may not be fully ripe when cut, they ripen afterwards, in the same manner as we see in grain after being cut. In such heads, I have seen in the spring young plants issuing forth as thick as you may see young clover from a seed-head. After the mowing of this crop of timothy, the thistle again puts forth another healthy crop of leaves, which now can luxuriate in the unobstructed rays of the sun and air, and so continue to the beginning of November, leaving the root stronger in stored-up matter than in the spring. Now, can this be altered? Yes. Sow clover for the time without timothy, and strain a point to mow it twice, and you will assuredly succeed. Now take two thistles in the following positions, and pause a little on the extreme difference. Look first at the thistle, the leaves of which, say, are six inches long, growing in unobstructed sunshine and air; see what a bright glossy green it assumes, how fierce its prickles look, most acutely suggestive of the annoyance of treading on it with naked feet, or pulling it up with our hands.

Now turn to a feeble specimen, overwhelmed in a heavy crop of clover, with a bunch of pale and sickly-looking leaves at the top, but none at the bottom; draw them through your hand, and they will not hurt you. Light and shade make all the difference. Cut off the one growing exposed, and it will soon push forth more leaves, which may be repeated perhaps ten times (as the steam-plough writer has said), and the reason is this: as soon as the leaves put forth, they begin to organize and throw back to the root as much as it has cost for their production; but cut off the light and air, and the case is reversed. The thistle grown in the clover has from the first been growing in the shade, and trying to keep pace with the clover to reach the light, producing thus its attenuated form, because its growth is not nearly so rapid as that of the clover, and growing in this condition it has extracted its whole substance from the root, without making any returns, and, consequently, the root has lost just so much of its substance. In the second crop, there will be the same disparity of growth between clover and thistle, only the latter will be much more feeble, so that when the second cutting takes place, the thistle is fairly subdued, but not quite destroyed. To complete the destruction, plough the lay down in the beginning of October; by this time what little power is left in the root will be exerted in the reproduction of some feeble leaves, for so long as there is active sap in the plant it must have lungs to breathe (during the growing season), or it will surely die; and by ploughing them down, no leaves are left as working agents to elaborate or digest food, to be stored in the root to produce the plant for next year. With this treatment the thistle is doomed, no matter of how long standing, or how numerous. The following has been my method of managing the clover crop. In the fall of the first year, do not feed it off after the middle of September, and if it be not strong, not at all. After the ground is frozen sufficiently hard to bear the cart or waggon, a dressing of half-rotten manure must be applied. Scatter it evenly from the waggon. This is to ensure two things—to prevent frost-lifting in the spring, and to ensure two crops: the first to be cut as soon as it is in full bloom, not a brown head must be seen. When the crop is removed, apply a dressing of plaster without loss of time. The first crop will (as a rule) be always ready from the twenty-first to the 30th of June; the latter, two months after. The last might be a little more matured. Now, it does not follow that the lay must be ploughed down after the first, or the second crop; but so long as it remains, it must have a slight dressing of manure in the fall for protection, and the second crop is

certain. In regard to the process of making or curing the following hints may be useful. If the weather be fine, it will need but once turning. Never put it in cock; for by so doing the leaves will drop from the stalk when spread abroad again to dry. In showery weather it is much more likely to suffer than timothy; for when once wet, after being withered, it will take twice as long to dry; consequently, a little more prudence is necessary. Never put it in a barn, or other building, but always in a stack. Twenty acres of clover will (on the average) yield 30 tons, and 30 tons make one good-sized stack, 28 feet long, by sixteen wide. If this stack were to be thatched, it could not be safely done for ten days or a fortnight, by reason of its sweating; but when correctly done, clover thus secured makes the very best of hay, and always commands fifteen or twenty shillings per ton more than other hay in the English markets. "Thatching at this time of year!" the farmer may say: "I have not time." Be it so; then get some good lumber boards, 14 feet long, and they will last a number of years with care, and are more easily removed as the stack is being consumed; and let no farmer think it a hardship to have one stack of old hay to commence the winter with. Hay put in stacks is considered in its prime at one year old. Now, suppose this clover-growing system only to effect the destruction of the thistle, then surely it is worth something; for, supposing the farmer had to consume the whole of it on his farm at the present time, I contend the hay would be worth to him at least 5 dollars per ton, which for the two crops, say, 3 tons, would bring in 15 dollars per acre; then allowing him for cultivating the extreme sum of 14 dollars per acre, he would clear 1 dollar, instead of losing 10 for fallowing. There are thousands of farms that would be much benefited if this system were adopted. Sell the crop in the form of mutton, wool, beef, butter, and cheese; milch cows ask for no better food, with an alternate feed of mangold and carrots. Sheep will fatten freely in winter on the same, with a few turnips. Horses (if not worked too hard) need nothing more, save a few roots of that generous yielding crop, the Belgian carrot. Then, in spring or fall, the farmer has got at hand what ought to give him as much pleasure to behold as dollar bills, namely a comely heap of manure; with this, he must not begrudge the sum required to buy a liberal quantity of bone-dust, an outlay necessary for the preparation of his root crops. Then his farm will grow, or become more fertile, in-

stead of deserving the bad character "run out." One word more about the clover stack. Scarcely one season could pass before this hay would rival any other in the market; then no other crop would pay the farmer better. It should not be loaded up like loose straw, but cut out (with a good hay-knife) in parallelograms, 3½ by 2 feet, each piece weighing about 40 or 50 pounds, which will make a snug load by laying two in breadth. They need not have bands, but two stout ropes to unload with; while one is being deposited the other might be fixing ready to be hauled up.

The 20 acres of clover ley, ploughed down, must absolutely be followed by a root-crop; say 5 acres of potatoes, 5 acres of turnips, 3 of mangold, and 2 of carrots; and to give the jaded ground a fair chance to recuperate, crop it with the same roots the second year, only shift their position; the farmer will then have plenty of food, to feed plenty of stock during winter. As a rule, permit me to say, never manure for any grain, or potatoes; reserve all for other roots and grasses. The next thing to consider is, how to manage thistles growing about stumps and fences. They must be cut with a spade close to the ground at the end of June, and again at the beginning of September, and be careful not to leave any leaves to ripen, and these also will then disappear. This work might be kept by little contracts to juvenile members of the family; or this failing, to neighbours' children, and this too without depriving them of schooling. Any boy or girl, ten years and upwards, can be taught the use of a spade in five minutes.

The above (may I call it a system) put into rigid practice will prove the true panacea for the evil in question, and other perennials will fare no better. No more appeals to the moon by the magician or enchanter; let her move silently in her orbit, without blaming or praising her, as having any lot or part in the matter, save only, when the farmer has taken his repose after tea, he may sally forth and (it may be half-a-dozen in family) all with spades in hand, for half-an-hour, and attack some secret patch of the thistles under the "enchanted light" of the much-abused moon.

In the spring, when the clover ley is quite dry, make a harrow of brush, or brushes, like an equilateral triangle, and with one horse-harrow twice, and cross-ways. This will crumble to pieces any remaining lumps, and leave the surface renewed, for which the clover will express itself grateful, after the first warm shower.—PUBLICOLA, in *Canada Farmer*.

REPORT ON BIRDS.

BY M. L. DUNLAP.

[We are permitted to publish the following from the advance sheets of the forthcoming volume of Transactions of the State Horticultural Society of America.—Eds. *Prairie Farmer*.]

In this bird-investigation we need accurate observations instead of theory. Facts are worth more than the fancies of the poets, who have from time to time defended, not only our song birds, but those of beautiful plumage; while they have consigned kites, hawks, and mousing owls to the tender mercies of the shot gun.

If we find that kites, hawks, and owls destroy mice and other vermin, we should certainly protect them; if, on the other hand, the robin gives us his morning carol to clear his throat for cherries, we may consider between the value of his music and the market price of cherries. Let us not, therefore, be hasty in our conclusions, but do even-handed justice though the heavens fall—with the skylark.

I must confess that my birds are well behaved, taking but a limited share of toll, and that in a very modest way. Last season I had about one hundred and fifty bushels of the Early May cherries, and it is possible that the birds ate one or two bushels, just by way of keeping up a taste for this fruit. Some one may ask if I have not made a compact with the birds—they to forbear to eat my cherries, and I in turn to defend them before the august tribunals of the people. No such thing: I deny the soft impeachment. Aforetime I have not been so fortunate; for of the only crop of Delaware grapes that I have grown, the cedar birds took over half, and they have been quite free to sample my Black Cape and Purple Cane.

"Exempt this year from their depredations, can you expect the same immunity the next?" Yes, under the same conditions of things. "Please tell us what they are." So I will. The native forest is five miles distant, my fruit farm having been carved out of the "Grand Prairie" where it sweeps down towards the vermilion of the Wabash, to the west; within the vision of a field-glass are the fringes of timber that border the lazy Sangamon; half way is Copper alough, the head waters of the Kaakaakia, winding its silent way amid the rank sedge grass of its marshy borders, innocent of forest growth.

The wrens and robins love the prairie, and delight to rest in its humble clumps of hazel and wild plum, and especially happy to make their summer home about the abode of man, and between feeding on noxious insects, seeds, and berries, they chirp and sing, with the honest intention to discharge the rent due to the farmer or fruit grower in the most satisfactory manner.

The cedar-bird, the blue-jay, and birds of this class nest in the old forest, or along its borders where man has hewn out his home; but of these birds I do not propose to discourse: they are not my birds, but belong to the woodland proper, for no blue-jay ever sends his dissonant notes athwart my prairie home, nor does the oriole hang his pensile nest on the swaying branches of my apple trees. The wrens and the robins come to me in force, with an occasional blackbird, mocking-bird, martin, cat-bird and swallow. These eat, sleep, sing, and rear their young in my grounds. Sometimes the cedar-bird pays me a visit, but I have never invited him to a social equality

with others of my feathered friends, for he is a sort of sneak thief from the distant grove, from whence he makes forays on the crops of small fruits. The sap-sucker stops on his way to the north, and again on his return, and leaves his mark; but he is always careful to go above the line made by the soda wash, and when that extends upward among the branches, he passes on. Why he has such an aversion to washes of this kind I do not know, for he does not stop long enough to ask or answer any questions. He mainly follows along the fringes of river forest, and only stragglers wing their cheerless way over the long sweeps that make up the "Grand Prairie;" they cannot stop to breakfast on grass, and are thankful to find some stray orchard whereon to make a feast. The damage he does to prairie orchards is inconsiderable. But where Lake Michigan sweeps westward, their numbers increase in this *civilized* land, and they do no small amount of mischief, not only on the apple, but the conifers and mountain ash. Citizens therefore have my gracious permission to shoot them—when they can catch them.

The robins and wrens become almost domesticated; they appear to understand our wants, and direct their energies accordingly. Our hired men work for wages, board, and washing; these birds ask no wages, only board in part, and do their own washing; this is certainly very reasonable on their part. I should not forget to mention the quails, of which one or more coveys make their home with me: they never appear to ask anything, even in the way of food, and yet they must do a large amount of work in the way of insect eating. In common with the robin they are fond of the wild strawberry; and just here is the whole secret of my good understanding with the robin. In the beginning, that is, when I first put the steel clipper into the virgin soil of "Rural Home," the Early Scarlet and McAvoy's superior strawberries were freely planted, and the robins as freely fed on them; of course they planted the seeds under every newly-set orchard tree, and as there was left a narrow strip along the rows uncultivated, these bird-planted strawberries grew and flourished, and extended themselves along the orchard rows. Now, Mr. Cock Robin is a connoisseur in fruit, and very much prefers the full ripe strawberry to half ripened cherry, for we send the cherry to market before it is fairly ripe; his taste is therefore for the strawberry in preference to the "Early May." I doubt if he will eat the large English Morello at all, at least he has not mine, and they hang on the tree until dead ripe.

All through the spring my grounds are kept nearly clear of insects, and it is but seldom that a nest of caterpillars is to be found throughout its whole extent of over a hundred acres of orchard and shelter-belts. As the crop of wild strawberries begins to diminish, Mr. Robin turns his attention for a few days to the closing scene of the Black Caps and Purple Canes, and no doubt would be thankful to have us plant the "Miami" to extend the season; and, if the so-called overbearing sorts

would produce a crop, no doubt he would give us an extra twitter and a song for the favour of an extended plantation of these.

In the spring, just as the plough turns up the dormant insects from their winter hibernation and leaves them exposed to the chill air, the crow-blackbird is at my heels, picking up these fellows before they cease to be astonished at their sudden uncovering. Writers on rural economy have often commended the bird for getting the early worm, but they do not seem to reflect upon the sad condition of the worm. In this case, at least, we may infer that it is the early spring instead of the "early worm" that is alluded to, and that the blackbird had an opportunity to rid us of our insect enemies. I concur in this view of the subject. After the corn is planted and its tiny blades begin to appear, he admonishes me that it is time to commence its culture. "Put in the sulkey plough," he twitters, "for I must have them; scratching for them is not my forte; stir the soil that I may get them; stir the soil that the sun and air may hasten the growth of the plants, so as to put them beyond their power to be injured; if you don't I shall have to make a few partial meals out of the corn itself, yet I prefer the worms." We heed this modest request of our honest black friend, and he has never disappointed us in this respect. Of course no foraging boys are permitted to disturb his young amid the leafy shelters of the orchard.

In conclusion, I have to say that I cannot join the committee in a general report, and therefore have my say as an individual member. The other members ought to know their own birds and to give an account of their good and bad habits, which they will no doubt do, when we shall have some reliable data to offer the society.

I do not permit any boy with deadly gun to kill or maim any of my birds. Even the mousing owl and the pouncing hawk shall have my protection, and, when the latter hovers over the barn-yard, with mischief in his eye, I give him the benefit of a gyratory motion of my finger and thumb, with the remark, "Well, old fellow, you had better go back to mousing, for Chanticleer has just retired under the conifers with his family, and is safe beyond your reach."

Were I located near some river, forest, or in the nook of some prairie grove, where the feathered tribe should decide to feast on my fruits and make no adequate return, but after dinner go back to the leafy dells of their forest home to do their singing, I might have a different report to make. But my birds eat, sleep, sing, and rear their young on my grounds, except (as I said before) the cedar-bird comes over from the grove on special occasions, much to my annoyance.

Prairie chickens will eat the buds from the young beans, but they only do so in the distant field.

On the whole, my birds require less pay for the same labour than any man that I can hire, and as present advised they shall be continued on the list of employees for an indefinite period.

FIELD MICE.

[TRANSLATED FROM THE "L'ECHO DE L'AGRICULTURE."]

Field mice appear in great numbers, sometimes in one locality, sometimes in another, causing ravages during many consecutive years, and then suddenly disappear. The following history of these little marauders is taken from the agricultural journals, which are now annually occupied about them:

From the year 1859 M. Charpentier Courtin pointed out to the Imperial and Central Society of Agriculture the appearance in the neighbourhood of Rheims of an innumerable quantity of mice of the wood or meadow-mouse (*Vole*) species. At Clermont-les-Fermes, department l'Aisne, a country noted for the fertility of its soil, we remember having seen at different periods these field mice in numbers so great that scarcely any crops were harvested. For some years it appears that that country is again threatened by a fresh invasion of the slow-trotting gentry. In 1866, my neighbour, M. de Brotonne,

mayor and farmer, promised one day to his ploughmen a centime for every mouse they brought home from the fields. They started in the morning at four o'clock to plough a clover field. In the evening they brought home a basket-full of these quadrupeds, and on counting them there were more than 1,500. Fifteen hundred mice on less than two hectares (4 a. 3 r. 30 p.) of land!

In 1867 the example set by M. Brotonne was followed by almost all the farmers of the neighbourhood, who, more than once, were astonished at the incredible number of mice brought home to them at night. My ploughmen, in ploughing certain fields, killed for me per day each from 300 to 400 and even 500 of these *rodents*. Now, they ploughed at the most 40 acres (119½ square yards each), which would make more than 1,000 mice per hectare. Let no one suppose that there is any exaggeration on my part. M. Delafond saw two boys following a

plough, armed with flexible sticks, who killed 1,700 mice in one day.

For many years I have attentively studied the multiplication of these animals. I have observed their migrations from field to field, and have attempted by many means to destroy them, and I now present the results of the numerous observations, and the reflections they have suggested, to the agricultural public, hoping that if occasion occurs they will avail themselves of it.

In 1863 there were very few mice in our fields, and it was necessary to look closely amongst the lucerne to discover a few small round holes, the certain signs of their presence. The following years their numbers increased, but at the same time without any great injury.

In 1865 the ravages caused were more considerable; for not only the artificial pastures, but the whitlow and other grasses (*Jarcaux* and great *dravières*) had to suffer. The wheat crop, except here and there of some empty spaces, was, as in the preceding year, perfectly successful.

In 1866 the evil enormously increased, and in the month of May it was reported that the mice were everywhere, and had spread themselves over the whole district. The wheat, and even the oats, the crops of which had been seriously injured by the heavy rains at the beginning of September, were attacked. There were mice under all the sheaves and swartha.

The winter of 1866-7 having been very mild, the mice multiplied enormously: the lucernes, clovers, and other plants, all gnawed at the crown, would not make any shoots in the spring, and large breadths of them, as well as of wheat, were ploughed up. I have seen colzas, that were magnificent in the autumn, so gnawed in the month of February that it was necessary to plough them up. Very little food was harvested this year. As to the wheat, it is not worth speaking of; but it is easy to imagine what must be the crop in the countries infested by the field mice, as badly as it was everywhere else. An old farmer, of the most respectable standing, and mayor of his commune, says of 1867: "I have been a farmer for forty years, and never had so bad a harvest."

It may be seen by the preceding, the starting point of the multiplication of the mice is, above all, traced to the lucerne. This fact has been stated in other countries for a long time. M. Bourgeois, a farmer in La Beauce, observed in 1859 that the field mice, in preference, spread themselves over the light soils, attacking especially the lucerne and sainfoin. This judicious remark, which corroborates my observations, I shall complete. The field mice love a soil in which they find galleries ready made, and these are found where there are moles. Now the moles work willingly in light, mellow soils, but we rarely find them in strong compact soils. It is for this reason that we see the field mice generally in light lands. On the other hand, these carnivorous animals, in order to withstand bad weather, must find in the soil a supply of food which never fails them, and this is furnished in the lucernes and sainfoins, which are made up of long and large roots, to which they are partial, and they can subsist in the fields of these plants when they are destroyed everywhere else. The fields of lucerne and sainfoin are therefore the chief centres of production of the mice. If we neglect to examine them, in order to destroy them while they are few in number, they will propagate there with astonishing rapidity. They commence by destroying those productive fields, and end by invading every part of the country.

There is another centre of production quite exceptional and accidental, but which I ought to mention. It is that of the hay or corn cocks remaining a long time in the fields. After the plentiful harvests of 1864 and 1865, wheat sold at a very low price, and there were at Clermont and its environs a great number of cocks or stacks which remained in the fields more than two years. The

mice multiplied in them; and when the stacks were removed, it was a rare but sad curiosity to see the innumerable field mice that had in every respect preserved themselves.

At present the evil is great, and the success of the next harvest is problematical. The farmers, uneasy, still hope, as they always do on such occasions, that the winter will be severe enough to rid them of this scourge. But most of them forget that this requires a union of atmospheric circumstances that rarely occurs. The land being frozen and covered with snow, it requires a very heavy rain. Frost will not destroy mice any more than it will the moles. Like these, and always following them, the field mice bury themselves deeply in the soil, in proportion as the frost reaches them, showing their noses above ground when hungry, only to return immediately to their galleries. Even the snow does not destroy them if the ground is frozen. The husbandman has often been surprised to see, after the melting of the snow, the mischief caused by the mice greatly increased. But if, when the earth is deeply frozen, and covered with a thick coating of snow, a heavy rain supervenes, the water not being able to filter through the soil, runs into the abodes of the mice. Then—but then only—their openings for aeration being stopped up, the inhabitants of these subterraneous dwellings perish either by drowning or suffocation. As it is rare to have all these conditions united at once, it is easy to understand why the winter every year does not lead to the destruction of these injurious animals.

In the uncertainty in which the farmers find themselves as to the result of the coming harvest, already more or less injured, it would be prudent for them not to lose any more time in waiting longer for a favourable time to deliver them from an enemy which, though small, is not the less dangerous.

In 1864 I had already poisoned the mice that infested my fields, and have continued to do so since. But in a country in which the cultivation is in small plots, all the farmers ought, in matters of this kind, to understand one another, which is a condition *sine qua non* of success. A general evil in a whole locality cultivated by many persons could not possibly be reached by one only. I confess that in spite of the perseverance and astonishing obstinacy with which I have followed the mice in my fields my crops have still suffered. But I dare to affirm that if I had not been left to fight these destructive animals alone, we might have made ourselves masters of their actions, and no longer have had to deplore uselessly such considerable losses by these mice, which would cease to be a scourge in our fields at Clermont. Now, however, I have some imitators, and their number is every day increasing. I see with pleasure that the farmers of Clermont and Bonecourt are convinced and are setting a good example to their brethren of the neighbouring countries.

I avail myself of this occasion to offer my personal thanks to M. Cauchois, manure-manufacturer of Creil, for the obliging communication he made to us relating to the object in question. That respectable gentleman, anxious to supply his products in a locality in which the crops are destroyed by mice, has forwarded to the address of the Mayor of Clermont a cask containing 170 kilos. of arsenical powder, which he has placed gratuitously at the disposal of the farmers of the district.

After having tried every means known and recommended, for a long time, and which I have found either too complicated or too slow, I have at length adopted that which I consider as the most expeditious and the least costly, and giving the most advantageous results. We take the siftings of wheat, throw over them water in which we have previously dissolved a sufficient quantity of gum arabic or of common starch; mixing them so that every grain is moistened. Afterwards we throw over

the whole, arsenical powder in a quantity sufficient to blanch every grain. It is then again turned over and left to dry. In a short time every particle of poison is perfectly attached, and in that state the mixture is ready to be applied. It is sufficient to place a few grains in each of the mouse-holes; but in those only that are the freshest and most recently formed.

Generally it is supposed that this operation involves a considerable expense, but this is a great mistake; and I appeal to those who practised it. One man, at wages of 2l. or 8l. (1s. 8d. or 2s. 6d.) per day, may easily in that time go over six hectares (not quite 15 acres) riddled with holes. In the fields less attacked, he might very well do 10, and even 15 hectares. Taking therefore six hectares as an average, we find that the operation does not cost more than 80 centimes (5d.) per hectare for hand-labour, which is the principal expense, since the wheat-siftings and the arsenic, &c., cost almost nothing; and if this little operation cost ten times what it does, I still maintain that the farmer could not lay out his money in any way

that would produce a greater benefit than that of poisoning the destroyers of his crops.

In conclusion; from what we have said, it results that in certain countries the success of the coming harvest is threatened by the field-mice; that the writer does not every year destroy them; that it would be prudent on the part of the farmers to come to an understanding amongst themselves, and to poison them simultaneously; and that the means are simple, ready, and cheap. It is equally clear that if the writer assists in the destruction of these devastators, the farmers could, without much trouble, prevent in future the reappearance of this calamity. For that purpose it is necessary—1st, to examine attentively the fields, chiefly those of lucerne and sainfoin; 2nd, to avoid having the stacks long in the fields; 3rd, to catch the moles; 4th, to preserve the owls and weasels, which are the natural enemies of the field-mice.

ANTOINE CHAVEE, farmer.

Clermont les Fermes.

THE TREATMENT OF DAIRY STOCK IN CHESHIRE.

Any one who would realize the injurious effects of poaching the land by allowing stock to run over the fields in winter, should pass over a Cheshire dairy farm in early spring, when vegetation is just beginning to make a start. He would there see a large portion of each field no longer carrying a grass surface, but looking like a bed of mud—I allude particularly to that part approaching the field gate, where it is most trampled by cows—while over the whole field there will be seen footmarks, deeply trodden, and the surface much broken. This state is caused by turning the milking-cows into the fields during the days and the young stock during the nights as well as the days, and results as much from the disquietude of the animals finding little or no food as from the want of comfort and shelter. I expect this statement will be met with exclamations of dissent and probably of derision by many a Cheshire farmer. I know the practice of housing milking-cows throughout the winter is not generally approved, and seldom practised; and as for young stock being made comfortable in fold-yards, I believe the majority of Cheshire farmers would scout the idea as an absurdity. Still, with all due respect to local prejudices (which, as I have said before, are generally based on some good grounds), I do not hesitate to say boldly, after searching in vain for good reasons to support the present system, that it cannot be many years ere the practice of exposing the stock in the fields, in all weathers, during winter, which I call both a cruel and unprofitable one, will be abandoned. If it were practicable to turn the cows out on fine days only for a few hours, and on land which would not yield to the treading of stock, it would doubtless be the best course to adopt, as, perhaps, the most natural means of maintaining health; but, in the absence of this arrangement, I cannot but believe it is much better to keep them in the fold-yard or under cover altogether, than to let them be stewed up in close buildings during the night, and turn them out in all weathers during the day. With young stock there can be no doubt that fold-yards, partially if not wholly covered, are their best receptacles during the whole of the winter. It is a mistake to suppose that protection and comfort involve a weakening of the constitution of animals, and that cold makes them more hardy and vigorous. The reverse is the fact; warmth is as necessary to healthy growth as it is to the production of fat.

The necessary heat of all animals is maintained by respiration, which in winter becomes more rapid in proportion as the atmosphere abstracts heat from the body; and as respiration itself can only be maintained by the process of combustion which the carbonaceous matter contained in food undergoes in the stomach, it follows that the colder the atmosphere the more food those animals require to keep up the necessary vital heat—that heat, in fact, which is itself as necessary to secure growth in young animals, the full yield of milk from dairy cows, and the increase of fat in animals preparing for the butcher, as it is necessary for the maintenance of life itself. I have seen some Cheshire farmers point with pride to the thick coat which their cows carry. They have spoken of them as proofs of their superior health and vigour. I have not always dared to say what I have thought about this; but, possessing myself a herd of valuable Shorthorns, I have studied the difference in their skins, comparing those doing well and laying on flesh with those that are not in that condition, and I have always found that a soft, pliable, hairy skin, covers a healthy flesh-making body. A thick hide, with thick, coarse hair, indicates, on the contrary, an unprofitable condition of body. Moreover the thick coats (upon which my friends of Cheshire, of whom I have spoken, pride themselves) can only be maintained at the expense of the bodies which they cover, and they would not exist if Nature did not think it necessary to clothe the animals with an extra thickness of covering to protect them against the cold blasts which meet them as they leave the shippon in which they have been crowded all night. Just fancy to yourselves the pernicious effects these thick heavy skins must have upon the physical organization of the cows when they come out in the morning after milking, reeking with the heated moisture they have collected in the shippon during the night, to be exposed and acted upon by the cold, frosty winds of winter, which dissipate the moisture of the coat and leave behind a chilling effect on the body. One of the results of this alternation of shippon and field is, that on each return of the cows into the shippon they carry with them a great deal of clay about their legs, which must have an unwholesome effect, for, though we have heard of wet bandages for horses as being good under special circumstances, I do not know of any justification for poulticing the legs of cows with wet clay, to interfere with their comfort and deteriorate the temperature of the shippon, already bad enough. I believe there is no doubt but that the Cheshire and Shropshire dairy farmers have suffered more than any others from pleuro-pneumonia; and the wonder is, not that the disease is a frequent visitor, but that it is not a constant one.—From a paper read at the *Severn Valley Farmers' Club* by Mr. J. Bailey Denton.

STRAW FOR SHELTER.

The importance of shelter for stock in winter has been frequently discussed and strongly enforced in this journal, and it is to be presumed that every farmer will admit the principle; but some plead in extenuation of their negligence in this matter, the impossibility, on account of their limited means, of putting up sufficient shelter for the comfort of animals under their charge. But this is, indeed, a very poor excuse; for where other materials are wanting, or where money and labour are scarce, most comfortable housing can be procured for stock of all kinds by an appropriate use of straw. In countries where timber is scarce, as on the prairies of Illinois, we have frequently seen the most warm and thoroughly efficient shelter secured by straw "fixings" even of the rudest kind. In these regions this is, indeed, the only abundant material for the purpose. Shelters for all domestic animals are constructed of it.



(Fig. 1.)

A few poles form a roof-support, and the straw is piled about and upon them. On the sides of the shed the straw is either simply a trodden-down heap, trimmed with a hay-knife on the inside, or it is piled against rails. These are very warm sheds (see fig. 1), but they wet through, leak, and the straw rots, and must be removed after a short time.

Instead of these rude and primitive structures, much better sheds might be built, using the same materials. Much of the tall stubble, cut close to the ground, is long enough to make most excellent and durable thatch, if well put on. A few bundles of wheat might be thrashed out by hand and the straw saved, or even the machine-thrashed straw might be used and answer tolerably well, if a sharp pitch be given to the roof. Thatching is understood by many immigrants, and the principles upon which good work depend are so simple, that where



(Fig. 2.)

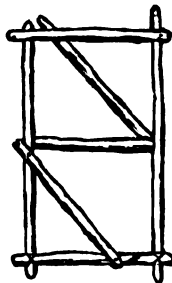
beauty is not demanded, any handy man will make a tight roof after a little experience. There are several methods of using straw to form the sides or walls of these stables. A convenient way is to set upright poles, about eight inches apart, and draw wisps of straw round each, so that both ends of each wisp shall be outside. It is best to lay these in horizontal courses, and beat down each course as it is laid, keeping it uniform and tight. As the filling-in with straw progresses, there may be a split pole woven in once in three feet or so, to hold the uprights in place. The straw is finally to be raked down on the outside, so as to shed rain well. This makes a tight, warm, and lasting wall. The inner side is quite even, and it may be sprinkled with mud if there is danger of the animals pulling out the straw to eat (see fig. 2.)

The accompanying illustrations, and the directions for construction, are taken from the *American Agriculturist*, to which able journal we are also indebted for the following account of other uses of straw in the same connexion. We would here, in passing, urge on all parties the importance of not deferring the necessary work of providing shelter until the severe weather has set in, and enforced the leisure to devote to the mat-

ter. A merciful farmer, or even one who has a wise regard for his own pecuniary interests, will make the opportunity, and secure the time while the weather is yet mild and favourable, so that when winter commences his stock will at once derive the protection and comfort they need, without having been previously exposed to, perhaps, some of the severest cold of the whole season.

STRAW DOORS AND SHUTTERS.

It is a great convenience where lumber is scarce to be able to make expeditiously a good door or shutter of any kind. Constructed of straw, a door may be strong, light, and tight. Tie or wire together a frame of round sticks, braced or stayed by cross-pieces to give requisite strength (fig. 3). This frame



(Fig. 3.)



(Fig. 4.)

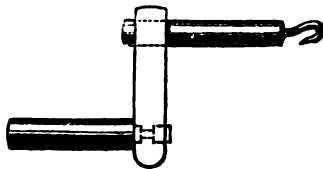
should fit loosely in the window or door-place, and one of the upright pieces should be strong enough to hang the door by. Then wind a straw-rope of $1\frac{1}{2}$ to 2 inches in diameter around the longest way, so as to cover the frame. Next, weave a tighter-wound straw-rope back and forth, plaiting the whole in a single mat (fig. 4.) The strands on each side of the frame may be plaited separately, forming thus a double thickness of the straw-mat. We have seen affairs made in this way by the soldiers, and stuffed with straw as the weaving progressed, and when done they made very good beds.

Straw-rope is made by twisting damp straw. Sprinkle a heap of straw the night before. All farmers should possess a set of centre-bits and stock. Take a large centre-bit and



(Fig. 5.)

attach a stout wire hook to it, and place it in the bit-stock. Where the bit-stock is wanting, contrive some substitute. Two persons are required; one twists a loop of straw into the hook (fig. 5), and walks backward, turning from left to right; the other remains at the straw-heap and feeds fresh straw to the lengthening rope. A sufficient length being attained, the rope is fastened upon a fence, or between poles or trees, until dry, when it will not untwist.



(Fig. 6.)

In a subsequent number of the same journal, a Scotch correspondent sent a drawing of a simple contrivance for twisting straw, in common use both in Scotland and England. The last illustration (fig. 6) sufficiently explains this home-made implement, which almost any farmer's boy will be able to construct.—*Canada Farmer*.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The monthly meeting of the directors of this society was held in Edinburgh, Mr. Reid, Drem, in the chair.

Mr. Irvine, of Drum, chairman of the Publication Committee, laid on the table No. 3 of the fourth series of the Transactions, containing nineteen prize reports, proceedings of the Chemical Department, premiums offered during the current year, and other official documents, and it was announced that about 3,500 copies were in course of being issued to members.

A minute of a meeting of the Chemistry Committee, held on the 19th of February, of which the following is an abstract, was read to the board. Dr. Anderson submitted the sub-joined letter and relative list of queries which had been sent to about sixty agriculturists in different parts of the country, and stated that twenty-eight answers had been returned, from which it appeared that there was considerable diversity of opinion among experimenters on the points mentioned in the queries:—

"15, Shuttle-st., Glasgow, Jan. 11, 1868.

"Dear Sir,—The field experiments undertaken by the society having now been continued for two years, I am anxious to obtain for the information of the committee any suggestions or advice which you may have to offer as to the best mode of conducting them in future years, and I have therefore drawn up a series of queries which I have transmitted to those gentlemen who have made the experiments during the past two years, and to such members of the society as are interested in the progress of experimental agriculture. I should esteem it a favour if you would reply to them as fully as you can.

"It is necessary to observe that the experiments hitherto made have been to a certain extent of a tentative character, as both the committee and the experimenters have necessarily had much to learn as to the best mode of making the experiments and the precautions required to ensure uniformity. I have no hesitation in saying that the experiments of the last two years have been made with the utmost accuracy, and reflect the highest credit on the care of the experimenters, but it is natural that experience should lead to improvements, and we are most anxious to take advantage of any suggestions that may be made to us for that purpose.

"The committee at the outset, after much careful consideration, resolved that the experiments should be made on a much smaller scale than has hitherto been usual, and they were induced to adopt this plan because there seemed no reason to doubt that with proper precautions as much accuracy in weighing could be obtained with a large as with a small plot, while there is greater chance of securing uniformity of soil and much greater economy of time and labour to the experimenter. It is probable indeed that there would have been difficulty in obtaining a sufficient number of experimenters to make experiments on a large scale when nothing plots are required (and experiments should never be made without them), as this would in many cases practically amount to the sacrifice of the crop over half an acre or perhaps a whole acre of land. When the plots are small the loss in this way is so trifling that it does not require consideration.

"On those and other points I am desirous of having definite information to lay before the committee at a meeting to be held towards the close of the month, and I shall esteem it a favour if you will furnish me with replies to the enclosed queries on or before the 24th January.

"I am, dear sir, yours truly,

"THOMAS ANDERSON."

QUERIES REGARDING FIELD EXPERIMENTS.

"I. Do you consider that experiments made on small plots of say 1-1½th of an acre give results which can be sufficiently relied on?

"II. Is it advisable that a series of comparative experiments should be made on both small and large plots, for the purpose of ascertaining whether the results correspond?

"III. If so, what size of plots would you recommend?

"IV. If yourself experimenting on the large scale, would you be prepared to leave nothing plots entirely unmanured, so as to show what part of the produce depends on the natural productiveness of the soil?

"V. The experiments hitherto made have been directed as

far as possible to tracing the effect on the crop of the individual fertilising constituents of manures, so that when our knowledge is sufficiently extensive, the farmer on looking at an analysis may be able to say with some degree of certainty what effect he is likely to get from each of its constituents. As, however, such conclusions can only be arrived at by experiments continued over a number of years, do you think it would add to the immediate interest of the results if some of the manures in every-day use were included in them?

"VI. Several of the experimenters have supplied a statement of the rainfall during the time the experimental crops were growing. Do you think this should be done in all cases, and should any other meteorological data be required?

"VII. Will you mention any suggestions your experience may lead you to make as to the mode in which the plots should be laid out, and the precautions required to secure accuracy?

"VIII. Are there any subjects for experiments with manures or on feeding stock which occur to you as deserving the attention of the committee? If so, would you explain as fully as you can the mode in which you think they should be handled?

"N.B.—It is very important that the subjects proposed should be limited in extent.

"IX. Any other suggestions which occur to you would be most acceptable."

After some conversation as to the number of experimenters required, and also in regard to the advisability of conducting experiments on both small and large plots, for the purpose of ascertaining whether the results correspond, the committee recommend that Dr. Anderson should communicate with the experimenters of last year, and on receiving their opinions, consult with a sub-committee, consisting of Mr. Harvey, Whittingham Mains; Mr. Melvin, Bonnington; and Mr. Park, Stoneyhill. The committee, considering it of importance that each experimenter should note the rainfall during the time the experimental crops are growing, recommend that a rain-gauge should, where necessary, be furnished at the society's expense.

The course recommended by the committee was approved of by the directors to-day.

The Special Committee on Steam Cultivation, to whose consideration the Marquis of Tweeddale's letter, proposing a trial between steam-cultivators and horse-ploughs on land at Yeater which had never before been subjected to deep cultivation, had been remitted by the board on the 6th of February, reported that they had held two meetings on the subject, and that nearly all the owners of steam-cultivators in Scotland had been applied to, and as none had agreed to accept the terms of his lordship's letter, the trial for the present was at an end. The directors approved of the report.

A letter was read from Mr. Alexander Leslie, Turriff, transmitting a copy of his patent "for improvements in apparatus for applying steam or other motive power to cultivate the soil and to actuate wheel carriages," and intimating that he would be prepared to give any further information with reference to his invention, and, if desired, to show the apparatus at work. The letter and relative papers were remitted to the special committee on steam cultivation.

The SECRETARY stated that the subscriptions of £300 and £150, voted respectively by the counties of Lanark and Renfrew, towards the expenses of the late show at Glasgow, had just been received, and that all outstanding subscriptions were now paid.

Letters were read from Mr. Angus, town-clerk of Aberdeen, transmitting official excerpt from the minutes of a meeting of the Aberdeen Town Council, granting permission to the society to use a portion of The Links for a showyard, and voting £76 towards the Premium Fund. On the motion of the chairman, the secretary was instructed to convey the thanks of the board to the Town Council for their liberality.

A communication was submitted from Mr. Anderson, clerk of supply for Forfarshire, in which it was stated that a voluntary subscription had been agreed to by the eastern division of that county, as had been done by the whole of the counties embraced in the district of the show.

A letter from Mr. Stuart, Aldich, secretary of the Spey, Avon, and Fiddochside Farming Association, intimating that the so-

ciety had resolved to subscribe twelve guineas in aid of the show at Aberdeen, was reported, and the thanks of the board were voted to the association.

A letter from Mr. Geddes, Orbliston, transmitting one from Mr. M'Combie, Tillyfour, on the subject of forage for the show-yard, was submitted. The board resolved to adhere to their former decision, and to furnish, as usual, forage, at a certain tariff, through the hands of a contractor—a local committee being appointed to see that the contract is properly carried out.

It was intimated that circulars, with premium books and relative blank returns, had been sent to 148 conveners and secretaries of local agricultural societies in regard to the competitions to be held during the present year.

The SECRETARY, in submitting the accounts connected with the testimonial to the Rev. Dr. Bell, of Carmylie, as the inventor of the first efficient reaping machine, stated that, irrespective of the subscription papers sent to all the bank agencies in Scotland, upwards of 5,300 circulars had been issued, and the result had been that 753 individuals had subscribed. The newspaper press in England and Ireland, as well as in Scotland, had, he said, given every publicity to the testimonial, and that the three daily newspapers in Edinburgh (the *Scotsman*, *Courant*, and *Review*) had inserted the advertisements at a reduced rate, while the two agricultural papers had made no charge for the subscription lists and other notices. The accounts as closed are as follows:

CHARGE.	
Amount received and advertised	£1,005 13 6
Interest from Royal Bank	4 18 7
	£1,005 13 1
DISCHARGE.	
Paid Rev. Dr. Bell.....	£359 10 8
Paid for plate	27 0 0
	886 10 8
Postage charges, printing, and stationery	77 11 1
Advertising	41 10 4
	£1,005 12 1

The CHAIRMAN announced that the second monthly meeting would be held on Wednesday the 18th current, at two o'clock, when Dr. Anderson, the society's chemist, would deliver a lecture on "Some of the Relations of the Plant to the Soil." It was reported that several candidates had intimated their intention of coming forward to be examined for the agricultural certificate and diploma of the society.

The following gentlemen were named as a committee of the society to confer with the Edinburgh University Committee on applied Science, with regard to the proposed agricultural department in the University: Sir Thomas Buchan, Hepburn; Mr. Hope, Fentonbaras; Mr. Russell, Pilmuir; Mr. Stephens, Bedbrae; Mr. Lawson, of Borthwick-hall.

CENTRAL FARMERS' CLUB.

CHEESE FACTORIES.

The monthly meeting of the Farmers' Club was held on Monday evening, March 2, at the Club House, Salisbury Square, Mr. C. S. READ, M.P., in the chair. The subject fixed for consideration, introduced by Mr. George Jackson, of Tattenhall, Chester, was thus stated on the card: "Would not the make of English Cheese be generally improved by the introduction of Cheese Factories?" The attendance was not large.

The CHAIRMAN in opening the proceedings said he was sure it must be refreshing to a body of farmers to come out of the stormy sea of agricultural politics in which they had lately been sailing, to take a stroll over some of the green pastures, and to be initiated in the inner life of a cheese farmer (laughter). For his own part, he must confess that he knew nothing about the subject; but he felt certain that they would all be instructed and entertained. He would now call upon Mr. Jackson to introduce the question on the card.

Mr. JACKSON said, Mr. Chairman and gentlemen, I have this evening to bespeak a twofold indulgence—one for myself, and the other for my subject. Although I have been some twenty years a member of your Club, I am so far removed by distance that it will to-morrow be twelve years since I have been present at one of your many important discussions; on that occasion I had the pleasure of bringing to notice "The form of Farm Agreement best calculated to give a stimulus to agricultural improvement." I feel the gravity in the subject the committee have now assigned me, to wit, "Would not the make of English cheese be generally improved by the introduction of cheese factories?" In casting one's eye over the list of interesting questions that have, during the last twenty-five years, been usefully discussed by our Club, it is, I fear, significant that dairy farming has only once been brought to notice, and then cheese-making was left for "future discussion," butter and kine absorbing the whole evening. I trust it was not because the cheese-producing districts are deemed insignificant in English farming; is it not, rather, that these districts are so far removed from the metropolis as to be all but unrepresented at the Central Farmers' Club? It certainly is not that the dairy department has been lagging be-

hind in the agricultural race for increased production. I agree with a gentleman who has designated "grass" as "a mine of wealth." Arable farming has a limit for cereals, which if we pass, we get straw plentifully and grain scarcely. But of pasture, who can say "the force of nature can no further go?" In the *Royal Agricultural Journal*, eight years ago, Mr. Harding, of Markeley, gave a calculation that in Somersetshire, 50 cows were kept where 30 only, not many years previously, had been kept; and in Cheshire, I believe, within 40 years dairy produce had doubled, before the cattle plague, and probably more than twice as much green crops and corn grown; and I see to reason why Cheshire should not in the next 40 years again profitably double her production. Though at the risk of exciting a smile, I give it as my unhesitating belief, that when our worthy Tiptree friend reveals to us "The undeveloped power of British agriculture," he will find in cheese-making a richer mine of undiscovered wealth than in any other department of farming; and this will be more apparent, if we take for our stand point the *Royal Society's* motto, "Science with practice," and glance at the relative value of cheese, compared with the other most nutritious articles of food. In the January and February Nos. of *Good Words*, for 1865, we have two most interesting articles on "The Nature and Composition of Food," from the pen of Dr. Lyon Playfair. He takes the steam-engine as no unfair type of our bodies, and shows that as the work the engine can perform depends on its efficient repair and the quality of the fuel supplied, just so with our bodies, only our food serves the two-fold purposes of repair and fuel, or flesh-forming and heat-giving substances, and he takes as the most perfect aliment for our bodies woman's milk; and nearly akin to it is the milk of the cow, the approximate analysis of which the Doctor gives as follows:—

Water	87.13
Casein	4.99
Butter	8.50
Sugar of milk	4.00
Mineral matter	0.77
	100.00

Now it is with this milk of the cow that our dairy-maids have to deal; and excepting districts from which London at a high price draws its supply of fresh butter, the advantage of cheese-making is as apparent to science as we find it profitable in practice—doubtless because grass-milk ordinarily contains more casein than butter; and as, by churning, the butter only is obtained, so (unless there is a near population to take the skim-milk, which to the poor is a valuable and economical aliment,) the casein has to go to feed hogs, and a serious waste of human food is thereby sustained; whereas cheese properly made uses the casein and at least 90 per cent. of the butter. And even if the other 10 per cent. of the butter is taken by getting the cream off the whey, the latter is hardly less valuable for the hogs than butter-milk; and as the proportion from grass-milk is about 1 lb. of butter to 3 lbs. of cheese, it follows that cheese-making is of far higher national importance than butter-making; and as three pounds of good cheese are of more commercial value than one pound of good butter, it explains why cheese-making, as a rule, is more profitable than making butter. Some idea of the enormous national value of milk to this country may be formed from the fact that in Cheshire alone, before the cattle-plague, the annual value of the milk produced must have considerably exceeded two millions sterling; and this is only one of the many English, Scotch, and Welsh milk-producing districts, and probably one-half of this enormous quantity of milk is annually converted into cheese. And could some more perfect and satisfactory mode of cheese-making be brought into general practice, so that cheese-making might be as profitable as it ought, we should doubtless by improved quality be as far then as we are now from over-taking the ever-increasing demand for good cheese. The importations last year from America were 935,512 boxes, being one-third in excess of the year 1866, and at 30s. per box represent £1,369,140. I take it there is still a larger importation from the continent of Europe; and thus is the increasing hungry population of this country ever adding emphasis to the demand—"England expects every farmer to do his duty." The following extracts are taken from an American paper, the *Utica Morning Herald*, of January 9th, 1868: "The production of England the current season is estimated at seventy thousand tons; North Wales is put down for three thousand tons, while Scotland contributes from seven to eight thousand tons of cheese, made in Cheddar shape and style. This gives a total home production amounting in round numbers to 80,000 tons, or about one hundred and seventy-nine millions of pounds. This, of course, is only a rough estimate; takes no account of small quantities made for local or domestic consumption in every dairy district, nor does it take into account the production in Scotland other than what is made on the Cheddar principle. Over twenty thousand tons estimated to be made in England are the produce of some ten or twelve counties: Somerset with 20,000 tons stands at the head, Cheshire with 10,000 tons coming next. Then follow Wiltshire with 7,000 tons, Dorsetshire 6,000 tons, Derbyshire 7,000 tons, Leicestershire 5,000 tons, the other counties running from one up to four thousand tons. What will be the effect of the low prices now current for that second-rate description of cheese, of which we have seen the bulk of the present English production consists? In the county of Cheshire much of the land in those districts where the ravages of the plague were most fatal has been stocked with sheep. Mutton, however, is unusually plentiful in England, and has been selling at a very low price: thus it must be hard times with Cheshire farmers, for those who have made cheese can only get low prices for it—say, from 4s. to 5s., and find it a difficult sale even at those figures, the quality running so in-

ferior: of really choice quality, very little has been made in this county. If prices continue at their present range, those English farmers who now make cheese of second and third-rate quality, must either improve or give up altogether. In Scotland, where they have lately taken to making cheese in the Cheddar style, we hear of a rapid increase in the quantity and immense improvement in the quality. They have not only completely driven the English Cheddars from their home markets, but they now send large quantities to London, Manchester, Yorkshire, and the north of Ireland." But the importance of our subject rises still higher when we look at cheese as the most nutritious article of food for the million, and to cheese science also points as claiming our first and highest attention. According to Dr. L. Playfair's table of the relative value of different kinds of food, page 29 of "Good Words," 1865, even cheap cheese contains 30 per cent. of flesh-forming and 26 per cent. of heat-giving matter. When we compare this food with the next highest, the mean of lean and fat butchers' meat, we have only 19 of flesh-forming and 14 heat giving; so that cheap cheese gives 11 per cent. more flesh-forming, and 12 per cent. more heat-giving than butchers' meat; and at page 30 the Doctor tells us that cheese presents us with the most flesh-forming food in the whole table; and at page 163, he further states that cheese gives us cheap flesh, but dear fuel; so we take with it bread, which supplies the latter economically. At page 28 the Doctor states that our appetites and tastes become the regulators of our food, and adjust the relative proportions of its several ingredients, and until the appetite becomes depraved by indulgence or disease it is a safe guide in the selection of aliments. With the Doctor's science agrees our experience; for, cannot we remember relishing "a bite of bread and cheese" when tired with field sports or field duties? and so when our harvester's strength is, at 4 p.m., getting below par, we restore it again with *quantum suff.* of bread and cheese. Not only does our experience testify to the value of cheese as food for the hard-working poor, but it also forms a luxury for the rich; for the old Lancashire farmer, when telling the story of his having been dining with his landlord, related: "We first had soup, then fish, then joints, then game, then pastry, puddings, jellies, and that sort of thing, and then—why, what do you think? why, we all had bread and cheese!" The following is the recent testimony of the value of cheese given by Mr. Morgan, in a paper read at the Swindon Chamber of Agriculture: "A certain combination of casein and butter thoroughly amalgamated and divested of every particle of foreign matter makes the most digestible, the most nutritious, and the most palatable of foods; and even under defective management, cheese-making is the most profitable of all agricultural pursuits." I learn from a West of England farmer, the maker of a first-class dairy of Cheddar cheese, having from 60 to 70 cows, that he made on an average of six years £24 per cow. This I take as a standard attainable, and well worth striving for, and it serves at least to show that there is in cheese-making a mine of undeveloped wealth and power. But I am far from supposing that cheese produce is suited to all soils and circumstances; on the contrary, there are large tracts of land in this country wholly unsuited to dairy purposes; and it would not be more ridiculous for Cheshire farmers to seek to rival Sussex and Kent in growing hops, than for these counties to build factories for making Cheshire cheese. All agricultural experience goes to prove that, except within narrow limits, we cannot profitably deviate far from the productions adopted by our progenitors. Still I agree with Mr. Morgan that cheese-making, even as it is, has been on the whole more profitable than butter-making, breeding, feeding, or the plough,

excepting the instances where the land is naturally rich, or artificially made so by high-farming, and even then with us the feeding successful farmer must in tact and energy be in advance of his neighbours. The two letters Nos. 1 and 2 (see "Appendix") are from Cheshire gentlemen of the latter class, who have exchanged the dairy for feeding and sheep breeding, and are our best judges of stock, and, apart from the difficulty and annoyance of dairy cheese-making, they give, with few exceptions, their verdict in its favour, and look prospectively to the advantages of cheese factories. No. 3 is a letter from H. White, Esq., who is an extensive land agent and surveyor, at Warrington, and whose name in connection with Cheshire cheese productions has long been a household word, and he has previously expressed a desire to see the factory system tried. The next letter is from Mr. Nicholl, of Chippenham, annatto manufacturer, whose name has long been associated with improved cheese-making. The remaining letters, No. 5 to 10, are all from gentlemen long connected with the various branches of the cheese trade, and with the exception of Mr. Watson, of Birmingham (No. 7), all write under strong convictions "that the introduction of cheese factories would lead to a general improvement in the make of English cheese." To me it is curious and amusing that the reasons Mr. Watson assigns for being content with things as they are, are precisely those which are calculated to make English cheese factories desirable, and inspire hope of their success. "Skilled" cheese makers, with "contiguity of farms and markets," "facilities of transport," and the "much more limited area of production"—certainly all these offer us great advantages in competing with America. I fear I have occupied too much of my paper in dwelling on the great value of cheese as an article of food, and the profitable encouragement of its production. I will therefore state that I agree with Mr. Dumbrell in his paper April 7th, 1862, that "it is surprising; for without doubt dairy-farming in this country has not made that advance during the last quarter of a century, which other branches of the subject have done;" and this I give as the result of my 14 years' observation of the London wholesale cheese trade, and 26 years as a Cheshire cheese factor, and dairy farmer of nearly 400 statute acres. It is not that we are behind in the knowledge, selection, and management of stock, nor the increased production of our land, pasture and arable. But it is still a moot point whether any improvement has taken place during the last fifty years, in the make of any kinds of English cheese. It is not doubted that contrivance has done much to simplify and facilitate the various operations of cheese-making. It is not, as too often alleged, that our dairymaids are indifferent or obtuse; I have on the contrary long cherished the conviction that the Cheshire dairymaids, as a class, are not only the most industrious and painstaking, but the most anxious to excel of any class whose services have come under my observation. With this agrees Mr. M'Adam in his recent treatise on "Cheese-making," where, at page 67, he states: "Although it is thus needful to strive after improvement and even to aspire to perfection, nevertheless we ought not to lay grievous burdens on those employed in this work in order that we may thereby enjoy more surely the pleasure and profit of success; and it is imperative to weigh well this matter, for the labour of this class may be turned by severe requirements and over-exertion into hardship and oppression, which in turn produce neglect and wastefulness. At present there is heard from many quarters a loud and earnest appeal for sufficient rest and leisure, and fewer hours of labour, and no class has better cause to turn this appeal into a demand than those employed in cheese-making. It is

no uncommon thing to find them engaged from five o'clock in the morning till after eight at night in milking, making, and turning cheese, or cleaning the dairy and utensils. And this Egyptian bondage is seldom lightened by the repose and sanctity of the Sabbath, for the thoughtlessness or prejudice of landlords and farmers, or a false motive of economy, often compels them to continue their drudgery on that day. Surely such a state of affairs is worse than a want of profit and far more reprehensible than a lack of success. Must these have no leisure, no recreation, no culture, nothing save the protracted hours of labour and a stinted allowance of rest? must all their energies of mind and body be directed to the accomplishment of such tasks as selfishness or apathy is pleased to impose and which circumstances compel them to perform?" If this be so—and so it is—how comes it to pass that we find all trade cheese-circulars and reports of all cheese markets and fairs join in one unbroken lamentation, that a large proportion of the make of English cheese is so inferior as scarcely to have a market value? The simple explanation is, our English cheese-makers are in a false position. Confessedly, of all manufacturers, they have in milk the most delicate of all raw materials to work upon; it is subject to all sorts of taints and adverse influences in badly situated and worse-arranged dairies, over which the dairymaid can exercise little or no control. She is expected with unerring certainty to conduct—amidst a mother's cares and housewife's duties—in all the varying states of the atmosphere, the subtlest chemical operations and changes, without proper instruments or education to use them, with no better chart or compass to guide than the tales of their grandmother, or what she has seen her mother or neighbour do, who acted on "the rule that guess-work is best when it hits;" surely it is monstrous under such a system of farm-dairying to expect success. The Americans are "cute fellows," and have got disgusted with the farm dairy system. If he were a bold man who bolted the first oyster, surely the Yankee farmer was bolder still who built the first cheese factory. When my esteemed friend Mr. J. Cordery first pressed on my attention that the American factory system was producing such satisfactory results as to justify a fair trial here, I viewed it as one of our Cheshire farmers, who has written against cheese factories thus: "I think it lost time to discuss the question of factory cheese-making in Cheshire, for the idea is unpalatable, because it is believed to be unnecessary, impracticable, and probably, on the whole, unprofitable." But a little more than a year ago, Mr. X. A. Williard, of the American Dairymen's Association, paid me a visit, and left me their report. I have, since then, had three other gentlemen staying with me that are identified with the American cheese factories; and I have also read much, and thought more, for and against cheese factories; and my scepticism as to their inapplicability to English dairy districts has been exchanged for a deep and increasing conviction that there is every reason for believing, with our advantage of climate, the contiguity of farms, better roads, and shorter distances for moving milk, with good home markets, that English cheese factories must ultimately triumph. They will secure a great improvement in the make of our cheese—be a boon to the producer, and so become a national blessing, by preventing an enormous waste of good milk from being made into bad cheese, and set free our dairy slaves. No doubt cheese factories will here, as they had in America, have to contend with obstacles arising from inexperience, prejudice, and jealousy; but the prejudice with us against American cheese is fast breaking down, if it has not already done so; and the secret why there is no market for common English cheese is, that the public prefer paying a reasonable price for good American; and, as

less we are content to be beaten in our own markets, there appears for us only Hobson's choice—fight America with her own weapon, cheese factories. The rise and progress of the American cheese factories is both significant and ought to be to us instructive. The following is from a statement made last autumn at the formation of a Dairymen's Association in Canada West: "The first cheese factory was established in 1851; and, in 1860, there were only 17 factories; in 1861, 18 new factories; in 1862, 25; in 1863, 111; in 1864, 210; in 1866, more than 500; and this year (1867), 1,000—not representing new cheese districts; for a considerable proportion have been erected in old districts, and have not increased the annual quantity of cheese, but only diverted it from family to factory manufacture. According to Mr. X. A. Willard, in 1862, "American cheese dairying may be said to have taken its rise in Herkimer county. It was here that the business first became developed as a speciality, resulting in larger yields of cheese from a given quantity of milk, better quality of cheese, and improved apparatus for its manufacture." Of the farm dairy system, Mr. Willard thus writes, "There is no desire to say one discouraging word of a business which has added so much wealth to the country, and in which those who are engaged generally prosper, and soon become independent in worldly goods; but the truth must nevertheless be told. Wealth has its advantages, but its price should be kept in view; and if overtasked muscle, incessant care, without relaxation, and finally disease, are to be the patrimony of wives and daughters, its charms, to say the least, are very much diminished." Agreeing with Hudibras, that

"The value of a thing,
Is what it will bring,"

we shall find that whether we compare the value of factory cheese at New York or at Liverpool, the trade circulars show 10s. to 12s. per cwt.—say from 15 to 20 per cent.—in favour of factories as against farm dairies. We take the following from the last week's circular of Messrs. Morrell and Co., Liverpool:—

FACTORIES.		FARM DAIRIES.	
	Per Cwt.		Per Cwt.
Fine factory	52s. to 55s.	Very good.....	42s. to 44s.
Very good do. ...	47s. to 50s.	Good.....	38s. to 40s.
Good do.	42s. to 46s.	Medium	30s. to 35s.
Medium	38s. to 42s.		

In the autumn of last year Mr. Etches, the oldest Derbyshire cheese-factor, after awarding the cheese prizes at the Lichfield Agricultural Show, is reported to have spoken at the judges' meeting as follows: "One very important question is the factory system, which has been extensively practised and answered very well in America; and were he a young man, he would go to America, learn their system, and build a lot of factories all about the country. That system has certainly produced a first-rate article, and there is a uniformity about it which it is of great importance to secure." In conclusion, Mr. Etches stated "he could give a good price for a first-rate article; but for inferior cheese he really could not find a market, with such competition from America." Knowing that Mr. J. Harding, of Marketbury, near Bristol, has devoted much thought and effort to the improvement of Cheddar cheese-making, and although he had questioned the propriety and success of cheese factories, I addressed to him the following questions, and append his answers:—

1st Question. I believe it will give you pleasure to inform me whether in fact you find that those who are as desirous to learn as you are willing to teach do not frequently fail to make cheese

Answer (1st). We find some who do not succeed in making as good cheese as they were taught to do, owing mainly to neglect. Some succeed perfectly; all benefit themselves by making better cheese.

equal to your own, owing, no doubt, to such causes as having their attention distracted by domestic or other cares, duties, and want of proper dairy arrangement &c., &c.?

2nd. Is it not true of Cheddar cheese still, as it is of the cheese made in the various other English dairy districts, that fine cheese is the exception and ordinary the rule?

3rd. Admitting as I know you do that with proper management and care milk may be moved one, two, or three miles, without injury to cheese-making, is it not so?

4th. Is it not your belief that if you with your practice, and Dr. Voelcker with his science, were to agree to confer together, and select a favourable site for a cheese factory, and had it built and made replete with convenience and perfect as you could jointly devise for its purpose, do you not believe that at such a factory you could make all the milk—say, from the nearest surrounding one thousand cows—into cheese as fine as your county now produces?

5th. And, further, permit me to inquire if it is not also your belief that at such a factory (*ad hoc* cheese college) the Doctor and you could in a few years train cheese-makers competent to take the management of other cheese factories? And supposing, also, cheese factories to have become multiplied in your county as they have in America, and supposing also that you and the Doctor engaged to devote your whole time in going from factory to factory, superintending, experimenting, and suggesting, with a view to reduce the manufacturing of milk to something like the certainty and perfection to which our large breweries have reduced the manufacture of beer, is it not, I say, your belief that the introduction of such cheese factories would be calculated to lead to the general improvement in the make even of Cheddar cheese?

At the last Cheshire Agricultural Show I met one of our farmers who has written against the introduction of cheese factories, and is renowned for making fine cheese; and I put the case to him thus: "Just suppose you and the two other farmers near, who make real fine cheese, decided to make your cheese at one place, and selected a suitable site, with the advantage of spring water, and you made every convenience that you jointly conceived desirable." I then inquired, "Do you not think that, with your united skill, and with such advantages, you could there make cheese as really fine as you do now?" He paused, and then said, "I think we could." I next inquired if, "when you had made your own milk into real fine cheese, you allowed all your neighbours who make ordinary

2nd. Everywhere fine cheese is the exception, and inferior the rule.

3rd. Milk may be carted any reasonable distance without affecting its condition, as far as regards making fine cheese.

4th. I have little doubt that if Dr. Voelcker and a practical cheese-maker were to make cheese at a factory, the average quality of Cheddar cheese may be improved; but I do not think it would be likely to reach our finest standard of fine cheese.

5th. It would be of course possible to train persons to make good cheese, so that the factory system may lead to a general improvement.

cheese to send their milk to your dairy, would not their milk make as fine cheese as yours?" He added, "I think it would." I replied, "You have admitted that you could start a factory at which all the milk in the neighbourhood could be made into real fine cheese. If at one, why not at all factories?" This will appear still more self-evident, if we compare cheese-making with cheese-manufacturing, or reasons why fine cheese cannot, as a rule, be made on a small scale, with the reasons why real fine cheese can, as a rule, be made on a large scale.

1st. Fine cheese cannot, as a rule, be made to command, on a small scale, a high price; for, on a small scale, a sufficient number of cows are not kept to make a bold, handsome, cheese; and even at Chester fair, I have frequently known an extra 10s. or 12s. per cwt. given simply for size and beauty.

2nd. On a small scale, they rarely select a site where there is a sufficient supply of spring water, and as rarely have proper conveniences for heating water to scald and sweeten the dairy vessels.

3rd. On a small scale, the dairy is used as a common cooking kitchen, subject to offensive smells, colds and heats, and the night's milk generally kept in badly-ventilated and worse-drained "pigsty-flavoured" milk-houses.

4th. On the small scale, the rennet is made daily from untried "skins" or "vells," without any rule to test its strength, or gauge as to the right quantity needed for coagulating the milk in proper time: too little or too much alike spoils the cheese.

5th. On the small scale, there is no proper convenience for heating the milk to a proper temperature for the rennet to act, and the hand used for a thermometer; and though, as Mr. Aston states, experienced dairymaids occasionally make fine cheese by the rule of thumb, they generally don't; and if, when they have put the cheese together, they will put one hand into very cold and the other into very warm water for one minute, and then put both hands into the cheese-tub, the milk at 80 degrees will feel hot to one hand and cold to the

1st. Fine, handsome, beautiful cheese can at all seasons of the year be manufactured, as seen at that eminently successful Cheshire cheese factory, Ridley Hall, where 180 cows were kept, and where the "fodder" or "boosey cheese" commanded, early, often a better price than the generality of good grass cheese. I had the pleasure of selecting the cheese that won the £100 champion prize at the Chester Royal Show, from cheese made in the autumn, when others were making common late makes, and can add my testimony to that of Dr. Voelcker and Mr. Aston as to the success of the Ridley Hall Cheshire cheese factory.

2nd. At a manufactory they have cold spring water, steam, and hot water, and every convenience for cleaning and sweetening the dairy utensils.

3rd. At the factory, as at our large breweries, by a simple contrivance, the dairy temperature can be regulated at pleasure; and the dairy is in America generally detached from the press-rooms and cheese-rooms, and every facility is had for keeping it sweet and clean.

4th. At the factory the rennet is prepared weeks or months previous to use, and its strength tested on a small scale, and its results calculated.

5th. At the factory the night's milk is put into tube, or, in America, long vats, holding from one to two thousand gallons, and in a few minutes, by a simple refrigerator, cooled to a temperature that will keep sweet for two days in the hottest weather; and, the morning's milk added, the same contrivance will as quickly bring up the temperature. A minute register is kept of the weight and quality of the milk, also the day of the month the cheese are made, and the temperature at which the rennet is added, and the exact quantity of the

other; and though dairymaids can avoid cold and hot water when setting their cheese, they cannot avoid cold or warm air, nor have their own blood so evenly healthy as not to deceive them.

6th. On a small scale there is no gauge for the use of liquid annatto; so one is too pale, another too high-coloured—an important matter with Cheshire cheese for the London market.

7th. On a small scale, there is no rule or measure for the proper quantity of salt, which is probably the most fruitful cause of bad English cheese.

8th. On a small scale there is no proper place to put the cheese for the first twelve or fifteen hours after made. Mr. Aston has invented an oven for the purpose; but he has found it, as those do who put them into boilers and furnaces, most difficult to avoid over or under baking the new cheese.

9th. On the small scale, cheese is often in variable weather spoiled by being pressed in too hot or too cold a place.

10th. On a small scale the cheese room is often hot when it ought to be cool, or cool when it ought to be hot, and no provision made for proper ventilation, that the cheese may ripen without being over heated or injured by the cold.

11th. On a small scale, ten times as many dairymaids are required, and hardly one in a thousand experienced dairymaids to be had, and those only by taking them for better or for worse, and then doomed to make seven days a week. Mr. Slater says their slavery is only for six or eight months—merciful man! At some farms, cheese-making lasts from January to January, and rarely less than nine months; and in the words of Mr. Macadam truly, "this Egyptian bondage is seldom lightened by the repose and sanctity of the Sabbath."

12th. On a small scale the butter money is generally claimed for "housekeeping," and poor cheese always fetches a poor price.

rennet weighed that will coagulate the whole in a given number of minutes. Thus this important and mysterious change is reduced to a certainty, and goes far to account for the admitted uniformity in the quality of factory cheese.

6th. At the factory, the weight of the milk known, there is no difficulty in calculating the ounces of annatto that will give the uniform and required shade of colour of fine Cheshire cheese.

7th. At the factory, the curd, when ground and dried to a given point, is weighed, and the salt also weighed and calculated, so that factory cheese do attain a uniformity of saltiness, the value of which cannot be over-estimated.

8th. At the factory, a properly contrived hot closet, heated from the steam boiler, can be arranged and maintained at the required given temperature. Mr. Harding, in Somerset, and the Americans, all cook their curd. It is much less trouble to cook the cheese as soon as made—we know that fine Cheshire cheese can, and therefore ought, always to be made thus.

9th. At the factory, the press room, kitchen, and cheese rooms are all heated or cooled by hot and cold water pipes, according to the state of the surrounding atmosphere.

10th. At the factory, the cheese when made are kept to ripen in a pure atmosphere, and the heat increased or decreased as in our large breweries, according to the state of the cheese market and weather.

11th. At the factory, everything is done by rule, and a dairy kept—science and manufacturing philosophy being brought to the test of experience—under the management of an intelligent and well-paid individual, whose work is to think for, and direct men and machines.

12. To the factory the new milk goes direct, and the cheese, having all the cream, should be rich, and fetch a fine price.

Lastly. The value of cheese on a small scale was again not unfairly represented at last Chester fair, where there was a good deal of cheese, and the bulk of it either taken home or sold at from 10s. to 15s. per cwt. below what anything in common American could be bought at Liverpool, and one large Manchester buyer boasted of having bought several lots of Cheshire cheese at or under 80s., and one lot 23s. 6d. per cwt.

Lastly. On a large scale, the value was seen by the same buyer giving, at the same fair, for a renowned beautiful lot 78s.; or 3½ cwt. of the one yielded no more than 1 cwt. of the other, and all made of milk of like value. Well might the late cheese-factor Williams exclaim of those that made bad cheese, "What a pity they have not given the milk to the pigs! they would then have had sweet pork." It would have been wise if we had last year done so with the milk from our seven cows; for although made by an experienced, anxious, careful old servant, the cheese came back from Chester fair, no offer having been made for them. Some of the best I picked out and sent to Manchester, some our servants and workmen ate, some I gave them to take home for their wives and children: the rest the pigs would not eat, but the poultry amused me by being less dainty!

These, Mr. Chairman and gentlemen, are some of the facts, considerations, and arguments that have disposed my mind, at first reluctant, to conclude that the make of English cheese would be generally improved by the introduction of "cheese factories;" and if guided by judgment, science, and patient perseverance, it has become my conviction that cheese factories are rich in promise of national blessing, by conserving one of the necessities of our existence, milk, buttering our bread on both sides, with good cheese, and butter, raising in all the dairy districts the value of land, increasing the dairyman's profit, affording also, by exemption from menial labour, facilities for the mental, moral, and social elevation of himself and his household; and to the prejudiced, the timid, and the unbelieving, I would adapt the words of Cowper—

"Ye fearful souls, fresh courage take:
The clouds ye so much dread
Are big with mercy, and shall break
With blessings on your head."

APPENDIX.

No. 1.

Stanthorn, Middlewich, Cheshire, Jan. 28, 1868.

My dear Sir,—I fear it will not be in my power to render you the information you wish respecting the relative profits of feeding and dairy farming. I have no doubt that cheese-making, supposing a dairy of average quality is made, upon farms generally in Cheshire, is the most profitable. If the grass land is either naturally extremely rich, or made so by the application of manure or bones, I think on the average of seasons feeding may be as profitable as cheese-making, supposing there is on the farm land adapted to the growth of green crops. But feeding will not pay so well as cheese-making upon land either weak in itself or below the mark in condition. I think it very important to bear in mind that our land in Cheshire is only adapted for feeding purposes, when either naturally rich or made so by high cultivation. If I had an opportunity of sending my milk to a factory I should not hesitate a moment about doing so. I am convinced that changing the land occasionally from dairying to feeding would be advantageous. Land when fed upon for a series of years I am satisfied does not feed so well as when it is first put to feeding. I fear these rambling remarks will not help you much. I shall very much like to see your paper when it is published.

Yours very truly,

R. DUTTON.

Mr Jackson,

No. 2.

Over, near Middlewich, Feb. 7, 1868.

Dear Sir,—The comparative profits between dairying and feeding depends very much upon the management. In feeding or grazing a good farm, both pasture and arable land in rich condition is essential to success, and this in the hands of a man of some business habits and good judgment, as well as skill in buying and selling stock, will, I think, pay on such farms better than cheese-making, except it may be in a few very exceptional cases, where a very high price is made of cheese. The expenses attendant on cheese-making are very great when summed up, much more so than those attendant strictly upon feeding. The wintering of dairy stock is also a serious cost; but the question is of more magnitude than I can go into now. Taking the average class of cheese farms in Cheshire into consideration, where the land is on the whole stiff clay, with the average ability of tenants there can be no doubt that cheese-making would pay best. Generally speaking, the Cheshire farmer is painstaking, careful, and industrious, and as regards milking very methodical, all essential requisites to success. But the grazier requires to have in him more of the business man—enterprise, quickness, and decision—more I think than a large portion of our farmers possess. Hence, considering the class of men who farm and the features of the land generally, it must be clear that the old course of dairy-farming is and must be more remunerative than grazing, unless the great and increasing expenses of cheese-making, the difficulty of getting servants, and when got the annoyance they often and largely are to the dairy farmer and his family, counteract it, as they seem certainly to be doing now compared with the past. And I feel pretty sure that a manufactory which could make cheese more economically, if of equal quality, would be a profitable change. But if in addition such a manufactory could improve the quantity or promote more uniformity, and of a higher quality than the average of the cheese now made, as any one who knows anything even superficially of the present ways and mode of cheese-making must clearly see it may easily do, it follows, I think, that the factory system of cheese-making would be a judicious and beneficial change. Other considerations also lead to the same conclusions, these however I need not state, and I think the objections against the change are not really so great or likely to be one-half so injurious as it is imagined.

Yours very sincerely,

THOMAS RIGBY.

G. Jackson, Esq.

The following letter is from H. White, Esq., an extensive land agent and surveyor, who is well known in Cheshire as a gentleman whose name has long been associated with efforts to improve the make of cheese:—

No. 3.

Warrington, Jan. 16, 1868.

Dear Sir,—I am glad to learn that you are about to read a paper in favour of the establishment of cheese factories in England. I should very much like to see the system tried, and I cannot help thinking that if it was, and under proper management, it would prove successful. The large quantity of inferior cheese made in Cheshire is a disgrace to the county, and is a proof of either great ignorance or carelessness in the manufacture of the article, or of the existence of bad domestic offices in which to make it; but whatever may be the cause, the loss in consequence to the Cheshire farmers must be several thousand pounds a-year. The quality of American cheese imported into this country appears to be improving annually; and the consequence is, that all but what is of very fair or good quality in Cheshire is difficult of sale at a price that is remunerative. If the Cheshire farmer cannot get 6d. per pound for his cheese at the present time, he ought to cease making it, and either sell his milk or convert it into butter. You know better than I do that many hundreds of tons of Cheshire cheese of last year's make have been sold to the factors under 6d. per lb. My professional duties are now so numerous that I have no spare time to give to this subject, in which I take a deep interest; you must therefore excuse my complying with your request to write you fully upon it, which I would otherwise gladly have done, but I have no doubt however but you will work out the problem satisfactory. The right thing would be for some wealthy agriculturist or landowner to try the experiment as to this factory system.

Yours very truly,

Mr. G. Jackson.

HENRY WHITE.

No. 4.

Rowden Hill House, Chippenham, Wilts, Feb. 12, 1868.

My dear Sir,—In answer to your kind note to hand, I beg to inform you that I am of opinion that if the factory system is not adopted in England, Scotland, and Sweden, the Americans and Canadians will unquestionably greatly interfere, as in the quality of cheese they have been sending to our market, taking quantity and quality into consideration, they certainly surpass us and others before-named. There cannot be a doubt about this question, it being the only method and means whereby good cheese can be universally produced. There is much said in England about cheese-making; and prizes have been very commonly awarded to those who exhibit 1 cwt. of cheese. I do not see that this system is calculated to be of any satisfaction to those who award such prizes; neither is it a credit to any exhibitor who may be successful in receiving the prize. I consider that many dairymen may select 1 cwt. of good cheese from a loft of three or four tons; still that is not satisfactory, when it is essential that all should be uniformly so to be beneficial to both dairymen and cheese-factor; and until the factory principle is strictly carried out, this difficulty will exist. There may be very many tons seen in the warehouses in Bristol, London, and Liverpool of American and Canadian cheese of an unmistakably fine quality; but not the case with English, Scotch, or Swedish. I think, with the great amount of influence that you have, there would not be any difficulty in erecting a factory; and were you to urge it upon the enterprising young dairymen of your country, they would at once fall in with your views. I should be glad to assist you; and I have no doubt Mr. McAdams of Gorstyhill, Mr. Crewe, Mr. Joseph Harding of Markesbury, near Bristol, would render them their assistance. I believe, if certain rules were adopted, that in one season such young men may become perfect in the process of cheesemaking, provided they erect a factory and obtain assistance from the two gentlemen before-named. There are dairy ladies of the old school still existing, who do not fail to produce good cheese, and some of which of the finest quality, but few of them; and I have heard it remarked that the daughters of some of these prime cheese makers fail to produce such a quality as their mothers. This being the case, it is high time that the young ladies should discontinue the business; and their brothers, or such young men as may have a desire to acquire a knowledge of cheesemaking and its management, should take their places. I have been of an opinion, many years, that the dairy business is not a proper one for females; and I think you must have their thanks, provided you carry out this new system, whereby they will be liberated. I am now at ease in my business, and should have great pleasure in seeing you and Mrs. J., to spend a week or so with us, either before or after you have finished in town. Hoping you may be successful in carrying out this object, and with kind remembrances to Mrs. J., yourself, and family, I am, yours faithfully and respectfully,

W. NICHOLLS.

G. Jackson, Esq.

The following letters are from leading gentlemen connected with the cheese trade, in answer to my inquiries:

No. 5.

London, Jan. 14, 1868.

"My dear Friend,—With regard to the question you submit as to American cheese, I have no hesitation in stating that the factory system has been the means of effecting a great improvement, both in respect of quality and appearance, while the uniformity in size is greatly appreciated. The result gained in America is certainly sufficiently encouraging to warrant an attempt to improve by a similar method the make of English cheese. I hope you will be successful in convincing your auditory that the views you have adopted are the right ones.—Dear friend, yours very truly,

JOHN CORDEBOY.

Mr. G. Jackson.

No. 6.

13, West Smithfield, London, Feb. 4, 1868.

Dear Sir,—In reply to your inquiries of the 3rd instant, I write, with much pleasure, to congratulate you on your noble attempt to enforce upon your dairy farmers the necessity of adopting some means for securing more uniformity in the make of their cheese as to colour and fine quality; and that unless they do so, I am convinced they had better give up cheese-making, which can only bring them loss; for certainly I have no customers that will buy inferior Cheshire cheese. If

Cheshire dairy farmers were alive to their own interest, they could not fail to perceive the advantage of a system by which they could secure the making of fine or good cheese; and I can conceive of nothing that promises to the English dairy districts such satisfactory results as in America they have obtained by cheese factories. I have now with me a gentleman from Holland, a large butter merchant—a very practical man; and he tells me that this coming summer he intends building in Holland a cheese factory, believing it will pay him better to make cheese at 40s. per cwt. than butter at 116s. per cwt. the summer price of Dutch butter being generally about 70s. per cwt. I shall be happy to learn that you have carried conviction to the minds of those who are so much interested in being convinced.—I remain, dear Sir, your obedient servant,

To G. Jackson, Esq.

G. BOWLES.

No. 7.

Carr's-lane, Birmingham, Jan. 23rd, 1868.

Dear Sir,—In reply to yours of the 18th, doubtless the manufacture of cheese, like any other article, is greatly influenced by the skill employed. I do not consider there is the same necessity, scope, or requirements for cheese factories in England as in America, from the contiguity of towns and markets, facilities of transport, and the much more limited area for its production.

Yours truly,

JAS. WATSON.

Mr. George Jackson, Tattenhall Hall, near Chester.

No. 8.

Bath, Jan. 23rd, 1868.

Dear Sir,—I can only answer your letter briefly. Your second question I answer first, and say that there cannot be a shadow of a doubt that the adoption of the cheese-factory system in America has wonderfully improved the quality of the cheese received from that country. For proof, I have now some in stock, bought in Liverpool by Messrs. Budgett, and called "Peoples' Factories," which I will match for quality and flavour against four dairies out of five made in Somersetshire, and this at a very moderate price. I am also of opinion that if the little jealousies natural to our Old English ways could be overcome, and cheese made in parish factories, a very different article would be given to the consumer.

I remain, sir, yours truly,

WILLIAM TITLEY.

G. Jackson, Esq., Tattenhall Hall, near Chester.

No. 9.

Purton, Swindon, Jan. 27th, 1868.

My dear Sir,—I have made several efforts to comply with your request; but the fact is I am an advocate for cheese factories only as a choice of evils. I am opposed to compulsion. I like one ship—one captain. I like individual responsibility and individual effort. I agree with Mr. Watson that cheesemaking requires skilled cheese-makers, and it is only because I despair, absolutely despair, of ever getting them otherwise than in factories, that I advocate cheese factories. I look upon factories as a means to an end—that end is the discovery of Nature's law in coagulating milk; in the next place, for providing proper machinery, and a sufficient staff of skilled workmen, with no interruptions entailing neglect at a critical period of cheese-making; a situation free from noxious vapour and pestilential effluvia; providing a congenial atmosphere for ripening cheese, and greater economy in manufacturing and disposing of cheese. We know that some of these things could be provided in a private establishment; but we know that it is not done; and although the farmers have had every inducement to provide them, they have not done so. They have seen their wives averse, their children neglected, their homes comfortless, their cheese spoiled: self-interest, which in all other cases rouse them to exertion, is in this case of the dairy-farmer powerless. For years past I have urged upon them improvement, instead of which the quality of cheese is worse than ever. Almost all the farmers in this district now admit the necessity of factories; but they are making no effort beyond talking, to bring the thing about. I have made several experiments with a view to find a substitute for rennet, and have succeeded in coagulating milk in ten minutes. If I succeed in rousing others to find a substitute for rennet I shall have done some good.

Yours very truly,

H. MORAN.

Mr. Jackson.

No. 10.

33, North John-street, Liverpool, Feb. 22nd, 1868.

Dear Sir,—In reply to your inquiries, I do not see that I

can add anything to your own extensive knowledge of cheese-making and its results. As you can fully testify from long experience, there are great defects in the make of English cheese. And I can only corroborate that testimony, and from personal observation and experience give you some idea of the improvement made in American cheese. On their introduction to this country they were only taken as a substitute for the commonest article of English make, and could only find purchasers at the lowest price of the market; and how that has altered under the factory system I have no need to state, as it is now generally admitted that there are cheese made at the factories nearly, if not equal, to any English dairy; and this is entirely the result of factory combination. I am personally acquainted with several of the directors and managers of some of the largest cheese manufactories in America. And from all I could learn from them and from my own observations when there, I have no hesitation in pronouncing it a decided success, and I can see no reason why it should not answer in this country, where, in my opinion, it is quite as much needed; indeed, if it is not adopted I can see nothing for the majority of cheese-makers but turning their attention to something else. Hoping your endeavours may be successful,

I am, dear Sir, yours truly,

JOHN MORRELL.

G. Jackson, Esq.

Mr. J. K. FOWLER (the Prebendal Farms, Aylesbury) said, coming as he did from what was perhaps the most important dairy district in the country—the Vale of Aylesbury—he had been anxious to hear what could be said about the advantage of producing cheese instead of butter. What he had just heard had given him quite a new idea with regard to dairy farming; and it is quite possible that this new question of factories might alter the opinion of many persons in the vicinity of Aylesbury as to the comparative advantages of butter and cheese. He might mention in the presence of Mr. Morris of Bedgrove, who introduced in his district the practice of making butter which prevailed in Wiltshire, where he formerly resided, that he had been compelled to give it up because he found that it did not answer so well there; and he (Mr. Fowler) had no doubt that by a proper application of the American system of factories in different districts a great deal of the difficulty which he and his fathers before him experienced in obtaining the best return from milk would be obviated. One of the great difficulties—he was sure that in saying that he would be borne out by many gentlemen whom he saw in that room—was to get good dairymaids. Even if you had a good dairymaid it was a serious matter to have the household constantly upset from five o'clock in the morning till five in the afternoon (Hear, hear). The work seemed never to be done; and he believed that Mr. Morris and some other of the best farmers in the Aylesbury district had given up the practice of making butter in consequence of the serious inconvenience of making the farm-house a manufactory for an article produced on the farm (Hear, hear). He did think that if the attention of agriculturists were concentrated on that point some improvement would soon be effected. There could be no doubt that the depreciation in the quality of cheese during the last ten years had been so marked that both the consumer and the producer had been equally impressed with the fact.

Dr. VOELCKER said no one who had paid attention to the manufacture of cheese could doubt that a great deal of cheese was spoilt by bad management (Hear, hear), and that under a proper system good cheese could be made from any pasture. No doubt the quality of the land in some degree affected the quality of the cheese; but, nevertheless, good saleable cheese might be made from any pasture. By far the largest quantity of cheese produced was, he believed, spoilt in the management. He had no hesitation in saying that nine-tenths of the whole amount was spoilt through sheer ignorance on the part of those who had the care of the cheesemaking. It had been

suggested that one great difficulty was to get good dairymaids. Might he be allowed to make a suggestion for the overcoming of that difficulty—it was that dairymaids should be got rid of altogether (laughter). Such persons were for the most part overworked drudges—very few of them knew their business. If farmers wanted to produce good cheese, let them get a dairyman and teach him how to make it, and the result would be that, instead of having poor drudges of dairymaids doing their best, and yet working like slaves from morning till night, they would have a man who by two o'clock in the afternoon would have done his work, and who could, like other agricultural servants, enjoy himself in a reasonable manner in the evening. A dairyman, if properly instructed, would soon be able to make good cheese. Were the factory system of America universally adopted in our own dairy districts, it would no doubt be a great step in advance. He must, however, claim for England the credit of their having shown their American cousins how to make good cheese (Hear, hear). Not more than seven years ago the American cheese was perhaps the worst cheese that was brought into the English market. But the Americans were very sharp fellows. The cheesemakers in America soon compared notes with the cheesemakers in England. Having examined the systems adopted in the various dairy districts in England, they settled upon the Cheddar system as the best, and introduced it generally into their factories; and it was owing to that cause that the American cheese had of late years so greatly improved (Hear, hear). He had not a word to say against the factory system; but he would warn dairy-farmers against relying upon combination to secure good cheese. It was true that there were often great difficulties in producing good cheese on a small scale; but he did not see why a farmer, having fifty or sixty cows, should not be his own cheese manufacturer, or why he should not adopt the system of management which had answered so well in the factories of America. He believed that if farmers were to set about making themselves acquainted with the proper plan of producing it, they would as easily produce good cheese as the brewer produced good beer, and would succeed without the aid of large companies. He would recommend all farmers who lived in dairy districts to endeavour to use a better system of cheesemaking; and in the case of localities, for example in Cheshire, where there were a great number of small occupiers, he would suggest to intelligent farmers that it would be well for them to buy up the milk of the district in order to make cheese. He believed that forty or fifty cows would afford quite sufficient milk for a single dairy farmer. He could not see any particular advantage in having very large factories; while, on the other hand, he saw some disadvantages. Cheesemaking was a business which, in order that it might be successful, required a great deal of personal superintendence; and he did not see how personal superintendence could well be exercised by a company with a manager, secretary, and other officers. If the business were one in which expensive appliances or superior scientific skill were required, then it might be desirable to introduce the factory system on a very large scale; but that was not the case; and he did not see how as large a profit was to be made by a company as by an individual, who, having settled in a district, bought up the milk of the district, and converted it, along with the milk of his own cows, into cheese on the Cheddar system of manufacture. He believed that, by the introduction of a systematic plan of making cheese, the quality of English cheese would be greatly improved, and a much higher price would be obtained. While he was on his legs, he would remark that no greater mistake could be made in the manufacture of cheese than by trying to combine one plan with another. The combination, for example, of the

Cheshire system with the Cheddar one would be fatal to the production of good cheese (Hear, hear). If they wished to make good cheese they must adhere to one plan, whether it was that of Wiltshire, of Cheshire, of Cheddar, or some other. It would never do to adopt partly the system prevalent in one district and partly that prevalent in another. It was in that way that a good deal of cheese, which would otherwise be tolerably good, had been entirely spoiled. If in Cheshire they used such drying chambers as were found in the Cheddar district, the result would be entirely to spoil the cheese. Cheese made on the Cheshire system required to be kept in a cool place, and not in a heated one, as was the case in the Cheddar district. He repeated that to mix two systems together was a sure mode of spoiling cheese.

Mr. L. A. COUSMAKER (Westwood, Guildford) said, having a considerable proportion of his land in grass, he had always endeavoured to ascertain how he could turn it to the most profitable account, and it had struck him that, independently of the management of the land generally, the quality of the milk depended upon the quality of the pastures on which his cows were grazed, while it was also necessary to take into account the state of the markets and other things of that kind. In the midland counties, where the pastures were rich, no doubt the most profitable thing was beef-making; on other soils, for example near London, veal-making, or perhaps selling milk; on others again butter-making; and down in Cheshire cheese-making. In Cheshire, if he understood the matter rightly, the quality of the soil was strong and the pastures were naturally poor, but after the land had been once thoroughly boned the quality of the grass surpassed that of any part of England for cheese-making, though management had also a great deal to do with the matter. He concurred in what had been said with regard to the difficulty of getting suitable servants for the management of dairies. If in his own county they were to set-up cheese-making he should not know where to go to find servants who would understand the proper mode of making cheese. Whether they made butter or cheese the process must require a great deal of care and attention to ensure satisfactory results.

Mr. WILLSON (Knapstoft, Leicestershire) said he came from a cheese-making county, though not quite so noted an one as Cheshire, and he must say he did not admit that the farmers of that county had of late years gone back as cheese-makers. The quotations for Leicester cheese were the highest in England, he might almost say in the world, at the present moment. He did not believe it was possible to carry out the system of factories with advantage either in Cheshire or in his own county, and for this reason: In his own county—and he might include Cheshire, where he had been lately—it seemed to him impossible to have a cheese factory where a large quantity of milk of equal quality could be obtained to make good cheese, owing to the great variety in the quality of the land. He made cheese himself, and he was happy to say that his cheese-factor had told him that he had given him the highest price by 1s. per cwt. that he had paid this year. His cheeses weighed from 40 lbs. to 50 lbs., and he believed that cheeses of that weight were worth more than any other of similar quality. Most of his cheeses had gone to Brighton and Hastings. He would now mention two or three cases as an illustration of what he had just said with regard to the difficulty of procuring a large quantity of milk of the same quality. No. 1 occupied a farm of good land, on which there was very little ploughing. The occupier had bought a large quantity of grains and artificial food for his cattle, and the land had in consequence become so rich that it was impossible to make cheese which had not a peculiar flavour. The milk was now

sent to London, and if it were sent to him (Mr. Wilson) to make cheese it would spoil his own milk. No. 2 was the case of a person who occupied an adjoining farm. His wife managed the dairy, and paid great attention to the cheese; this farm produced a greater weight of cheese for each cow than his own. The difficulty in the case of factories would be to pay each occupier the proportionate value of his milk. No. 3 occupied a farm on which it was impossible to make cheese at all except such as would have to be sold as skim-milk cheese, making milk-butter first. That milk, too, would spoil the cheese. Lastly, there was another farm which made very good cheese, but then the amount was very small. He did not see how it would be possible to combine all these different kinds of milk under the factory system. He was not surprised at the failure of cheese in some parts of Cheshire. In going over the estate of Lord Combermere he found that where the land was boned it made very good cheese, but that in some parts the soil had been so exhausted that it was impossible to make good cheese.

Mr. W. GARDNER (Bekebourne, Canterbury) said he presumed the reason why English cheese was not so good as it used to be was that the same amount of attention was not paid to the making of cheese (Hear, hear.) They knew perfectly well, so far as the labour market was concerned, that people would not work so hard as people worked formerly, and while farmers wanted perhaps to get as much out of dairy-maids as their predecessors got, dairy-maids did not seem to care about giving it (laughter). That might be one reason why cheese was not so good as it was. They all knew that it was a very difficult matter to get good cheese; they had to pay a precious deal of money, but the article was nevertheless very bad. There must surely be some mismanagement in the case; and he really thought it was not creditable to the farmers of this kingdom that they should have allowed America to step in without an effort to compete with it. Some people might tell them that increased competition was one cause of the falling off in quality; but be that as it might, let care and attention be now bestowed on the matter. He agreed with the learned Professor that if a dairyman were substituted in some cases for a dairy-maid things would go on better. With greater hand-power they might expect better results.

Mr. SWAN (Leicestershire) observed that his experience was small; but so far as it extended it was in favour of employing a dairyman in preference to a dairy-maid. Seasons had, he was convinced, more to do with the quality of cheese than was generally supposed. In a dry season the land would be favourable for the making of cheese. It was followed perhaps in the next year by a luxuriant summer, and the land becoming very rich, the cheese acquired a peculiar flavour. He quite agreed with Mr. Wilson as to the difficulty, and almost impracticability, of having cheese factories, in consequence of the variations in the quality of milk. As a practical dairy-farmer on a small scale, he did not see how that difficult question was to be solved.

The CHAIRMAN, in closing the discussion, said: Gentlemen, we have been told this evening that we owe to the Americans the introduction of the system of cheese factories. But we have also been told that the Americans have learnt from us the art of making good cheese. Well, they are 'cute fellows. We invented the reaping machine, and they brought it out for us: With the Americans, I suppose, Necessity is peculiarly the mother of Invention. We had had dairy-maids, and they in fact had none, and therefore they were obliged by necessity to have recourse to the cheese factories, which seem to have answered so well. As to the possibility of extending that system to England, of course I, as an occupier of arable

land, can say nothing. But this I would say, that the extension of cheesemaking to other districts than those in which it is now practised is, I believe, quite possible, and I also think it would be attended with success (Hear, hear). Some 20 years ago I happened to manage in South Wales a light land farm, composed chiefly of blowing sand, and very dearly rented. Indeed, so dearly rented was it, it was my belief that if anyone took the lease as it stood, he could not possibly make the farm pay. To my great surprise, that lease was taken by a Somersetshire gentleman; and when I went down a few years ago, instead of finding as I had expected a ruined man, I found a most affluent and prosperous one. I found that he had a dairy of 70 cows upon that blowing sand; and he made cheese that was selling at £3 per cwt., which is, I believe, considered a very good price. He did this in the easiest way possible. He let the 70 cows to a man and his wife, whom he brought from Somersetshire, at £11 per cow, and he never had any trouble or bother about the matter himself. Well, I would say, gentlemen, that if you establish cheese factories, they will of necessity be popular among the ladies. Of all the hard-worked people that I know, I must say that the wife of the cheese-farmer is the most hard-worked (Hear, hear); and when you consider the drudgery, the incessant toil, week-day and Sunday alike, of the dairymaids, I am quite sure that if any means can be devised to lighten that pressure, a great amount of good will be done. The quality of the cheese may, too, surely be improved. We in Norfolk have never attempted to make anything but skim-milk cheese; and you all know that whenever you get any of that into your mouth, supposing, that is, you are such fools as to put it there, you find the bit "too big to swallow, and too hard to bite" (laughter).

Mr. JACKSON then replied. He said the best answer he could give to those who doubted whether factories could work well, was that in America they had increased in number within a few years from one to a thousand; and they were still multiplying. As regarded Dr. Voelcker's suggestion that men should be employed in dairies instead of women, he begged

to say that he and others had tried men, and the result was by no means such as to diminish their desire for factories. The best kind of men did not like to be so employed. It was considered a sort of stigma for a man to do what had been woman's work. Mr. Harding, of Markesbury, and Mr. McAdam, of Crews, had attempted the system of employing men and had not found it to answer. As to the objection urged against factories, that the milk could not be all of one quality, he would just inquire of Dr. Voelcker whether he thought it was all of the same quality in America.

Dr. VOELCKER: No. In America he believed the milk was taken according to the quality.

Mr. JACKSON went on to contend that economy must be on the side of factories, only one superintendent being required for the produce of a number of farms.

In reply to a question from Mr. Gardner as to whether the various kinds of milk could easily be tested,

Dr. VOELCKER replied in the affirmative. By means of a lactometer they could get the gravity, which would give the proximate amount of curd, and by letting the milk stand for twelve hours they could get at the amount of cream.

Mr. CONGREVE, in moving a vote of thanks to Mr. Jackson for his excellent introduction, observed that in speaking of the falling off in the quality of English cheese, some of the speakers seemed to have overlooked the fact that there was one exception—namely, Stilton cheese (Hear, hear). He believed that that kind of cheese was better at the present moment than it had ever been before. That cheese was, however, confined to a small area, and the manufacture was totally distinct from that of other cheese.

Mr. WILLSON, in seconding the motion, remarked that Stilton cheese was originally made at Owston Lodge, on the borders of Rutlandshire. Although it was called Stilton, it was not made, he believed, within twenty miles of that place.

The motion was then carried unanimously, and the proceedings terminated with a similar compliment to the Chair man.

PROPOSED FOREIGN CATTLE MARKET.

DEPUTATION TO THE DUKE OF MARLBOROUGH.

On Tuesday, March 3rd, a deputation from the Club had an interview with the Duke of Marlborough, President, and Lord Robert Montagu, Vice-President of the Council, at the Privy Council Office, Whitehall, for the purpose of presenting a memorial from the Farmers' Club, in favour of the establishment of separate markets for foreign cattle, both in London and at the ports of entry. The deputation consisted of Mr. Clare Sewell Read, M.P., chairman of the club; Mr. Commaker, Surrey; Mr. W. Cheffins, Middlesex; Mr. Eve, Middlesex; Mr. J. K. Fowler, Bucks; Mr. T. Horley, Warwickshire; Mr. J. Howard, Beds; Mr. G. Jackson, Cheshire; Mr. T. Owen, Berks; Mr. S. Skelton, Lincolnshire; Mr. T. Wilson, Leicestershire; Mr. N. Rix, Hertfordshire; Mr. T. W. Morris, Buckinghamshire; Mr. Hayton, Middlesex.

Mr. C. S. READ said: My Lord Duke, I have the honour of introducing to you this deputation, in the character of chairman of the Farmers' Club. The deputation is purposely a small one, in order that your grace may not be inconvenienced; but the meeting at which the memorial to be presented was agreed to was a very numerous one—it was, in fact, one of the largest and most influential meetings that the club has ever held. I will now, with your grace's permission, call upon the secretary of the Club, Mr. Corbet, to read the memorial.

Mr. CORBET then read as follows:—

TO THE LORDS OF HER MAJESTY'S MOST HONOURABLE PRIVY COUNCIL.

That your memorialists regard with much satisfaction the introduction of a Bill for the establishment of a waterside

market, in or near the metropolis, for the sale and slaughter of foreign cattle.

They are also much gratified to find, from amendments to be moved by the noble lord the Vice-President of the Council, that all foreign sheep and pigs will be included in the Bill.

They would respectfully urge the necessity of a speedy erection of the proposed works; and they hope the operation of the Bill will be extended by Act of Parliament to all ports of the United Kingdom at which "foreign animals" are landed.

Your memorialists consider it of great importance that at least one day should intervene between the market-day at Islington and the market-day at the proposed foreign market, not only for the convenience of buyers, but the more effectually preventing the introduction of contagious diseases.

The establishment of a separate market for foreign stock would, in the opinion of your memorialists, materially increase the supply of stock to the metropolis, and is the only means by which the stock of this country can be defended from the importations of cattle-plague and other foreign diseases.

That, as the remarkable and universal improvement in the health of the stock of the United Kingdom is distinctly to be traced to the restriction in the movement of stock, in consequence of the cattle-plague, it is desirable that permanent regulations for the sale and transit of our home stock should also engage the attention of Parliament.

Signed on behalf of the Farmers' Club,

CLARE SEWELL READ, Chairman.

Mr. READ, after handing to his grace the report of the discussion of the Farmers' Club, on the occasion on which it was

agreed that a memorial should be presented, proceeded to say : I am quite sure, my Lord Duke, you must have been almost worried to death in receiving deputations on this important subject ; and I shall not therefore weary you by entering into details. I may say, in the first place, on behalf of the Committee of the Farmers' Club, that they are very much obliged to Her Majesty's Government for having introduced their Bill into Parliament, and that they believe that, with the addition of the amendments suggested by the Noble Lord the Vice-President of the Council, and with the extension, if possible, of the principle of dealing with the subject by Act of Parliament rather than by Orders in Council to all other ports as well as the port of London, very material benefits will be conferred on the consumers of meat in this country as well as on producers. I wish particularly to impress upon your Grace this fact—that the farmers of England in advocating this particular measure do not do so on the old, exploded ground of protection (Hear, hear.) They say most distinctly and emphatically that all they wish is to be defended against foreign diseases. We do not wish to keep out one pound of meat ; but on the other hand, we are determined, with the assistance of Her Majesty's Government, to have a Bill carried into law which we believe would save our flocks and herds from the devastating effects of the diseases which have been imported into this country during the last five-and-twenty years. We contend that during those five-and-twenty years we have been placed at a very great disadvantage—a disadvantage which has been felt in the result by the consumers of meat as well as by farmers. Statistics have proved beyond all dispute that if there have been a great number of cattle and sheep imported into this country, they have been the means of spreading disease, and an equal, if not a greater number of our home stock has been killed. If by any possibility the cattle of Spain or of Portugal could, without any interference with existing treaties, be admitted into one or two ports, the farmers of England would not have the slightest fear. Instead of wishing stock from those countries to be restricted to the ports at which they were landed, we should say that they might without any hesitation be sent all over the kingdom. I could further say, that we believe that what is proposed is our only hope of safety : all other measures are but half-measures. The trade and industry of the farmer are crippled by the present restrictions ; but we say that, so far as London is concerned, those restrictions must be continued as long as foreign stock comes into the market to mix with our home cattle. I will not trespass any further upon your Grace's attention, but I would state in conclusion that we have here practical farmers from all parts of the country, and they will be most pleased to give your Grace any information that you may require, and to answer any questions that you may put to them.

The Duke of MARLBOROUGH : Would there not be some difficulty in including sheep in the orders that relate to cattle ? For instance, if a butcher imported a certain number of sheep, and did not want to kill them all at once, would there not be some difficulty in such a case in sheep being confined to a definite space ? He would have no place to pasture them. How would you meet that case ?

Mr. READ : I presume there would be buyers, as there are in the metropolis.

The Duke of MARLBOROUGH : I am not speaking of that. If sheep were imported at Harwich, or some other seaport, and were not intended for consumption at the place, would there not be some difficulty in isolating them within such pastures as the butchers would require in order to feed them ?

Mr. READ : I apprehend that there would be no difficulty. The space that is allotted for quarantine-ground would be easily available.

Lord R. MONTAGU : Do you think it would take as long for sheep to become free from all disease as cattle ? Twenty-one days is the period mentioned for beasts. Do you not think the period for sheep might be shorter ?

Mr. READ : That question ought, I apprehend, to be answered by a veterinary surgeon. If you ask my opinion whether sheep imported with scab—to which nearly all imported sheep are more or less subject—I reply that I think if they are dipped, a shorter period of quarantine than 21 days would be sufficient.

The Duke of MARLBOROUGH : I think the memorial asks that permanent regulations should be made with regard to the movement of stock generally throughout the country. The

restrictions which were enforced during the prevalence of cattle-plague seem to have been effectual in arresting other diseases. Has it occurred to you how the Government might impose restrictions on the movement of cattle generally throughout the country, so as to arrest the progress of such diseases as pleuro-pneumonia, foot and mouth disease ?

Mr. READ : I think it would be well for her Majesty's Government to introduce a bill which would embrace all these contagious diseases in one enactment, instead of those restrictions being spread over two or three different Orders in Council. There should, I think, be a bill to prevent animals which have any of these different diseases from being moved along the road or rail, and to require that they should be at once sent to the slaughter-house. I would ask Mr. Jackson, of Cheshire, to enlarge on that point.

Mr. JACKSON : We have suffered very much, as your Grace must be aware, in Cheshire ; and, so far as I am acquainted with the general feeling, there would be no objection to proper restrictions on the movement of stock. I would say, when a disease has been ascertained to exist in a particular place, let a cordon be drawn round that place, as was done in the case of the cattle-plague. I believe that such restrictions would be a blessing instead of a curse.

The Duke of MARLBOROUGH : You are aware that very severe regulations have been imposed in the case of cattle-plague. A cordon has been drawn round the place and no animal has been allowed to move a mile away from it. How do you suppose farmers generally would submit to such regulations in reference to pleuro-pneumonia and other diseases of a similar kind as have been carried out in regard to cattle-plague ?

Mr. JACKSON : So far as I know farmers, they would willingly submit to them, being very anxious to prevent the spread of disease.

The Duke of MARLBOROUGH : One of the provisions of the Cattle Plague Act is, that an inspector shall be empowered to enter a farmer's premises for the purpose of inspecting his cattle if he suspects that cattle-plague exists there. Do you think farmers would put up with inspection if it were suspected that pleuro-pneumonia existed ?

Mr. JACKSON : I think so.

The Duke of MARLBOROUGH : I certainly think there would be some opposition.

Mr. READ : Of course it is assumed that in all cases of compulsory slaughter there would be compensation.

The Duke of MARLBOROUGH : In the opinion of the practical men present, what diseases are sufficiently serious to be put in that respect in the same category as cattle-plague ?

Mr. J. HOWARD : I believe that farmers as a rule are quite as much afraid of pleuro-pneumonia, and foot-and-mouth disease as of cattle-plague. Twelve months ago a farmer who had pleuro-pneumonia among his cattle sent them to market and sold them. He (Mr. Howard) bought some of these animals, and the result was that he lost twenty within a few months. That disease was spread over a very large area. He thought that on the outbreak of pleuro-pneumonia or foot-and-mouth disease it should be illegal for the owner to send his cattle to market for a certain time. That question should be viewed with reference to the interest, not merely of one or two farmers in a particular neighbourhood, but in relation to the interest of the whole body of farmers in the arresting of diseases, and it seemed to him that such a regulation as he had mentioned would work very beneficially.

The Duke of MARLBOROUGH : Would you have cattle slaughtered for foot-and-mouth disease as they have been for cattle-plague ?

Mr. J. HOWARD : No.

The Duke of MARLBOROUGH : Then you admit that there must be some relaxation ?

Mr. J. HOWARD : I would simply make it illegal for a farmer to send his cattle to a public market after either pleuro-pneumonia or foot-and-mouth disease was proved to be upon his farm.

Lord R. MONTAGU : Can pleuro-pneumonia be cured ?

Mr. J. HOWARD : No ; I believe not.

The Duke of MARLBOROUGH : You don't mean exactly that foot-and-mouth disease is incurable ?

Mr. J. HOWARD : No ; but when you have got pleuro-pneumonia on a farm you can never know when you will get rid of it ; and by slaughtering indiscriminately you might of

course destroy a large number of healthy cattle. If a farm were officially declared to have been free from pleuro-pneumonia for two months, there need, I think, be no fear of the effect of sending cattle upon it to market.

Mr. READ: Allow me to say, your Grace, that at the meeting of the Farmers' Club to which I have before alluded it was thought that cattle affected with pleuro-pneumonia, small-pox, and scab, should be excluded from all markets and strictly isolated on the farm. We did not go the length of saying that cattle attacked with any of those diseases should be slaughtered. As regards foot-and-mouth disease we considered that no stock known to be affected should be allowed to leave the farm; but it may happen, as it frequently has done, that animals will be attacked while being moved from one place to another, and I believe the feeling was that they should in that case be allowed to proceed to their destination. Your Lordships are no doubt aware that cattle moved from Ireland to this country are several days on transit, and as foot-and-mouth disease may be developed in 48 hours, and is never scarcely fatal, the proper course is to isolate the animals affected as much as possible, so as to protect other stock, but to allow them to proceed to their destination.

The Duke of MARLBOROUGH: Well, what would you do in the case of cattle having foot-and-mouth disease coming from Ireland to this country? Such herds as you allude to travel through the country, going from one market to another: where would you put them, supposing they were attacked on transit?

Mr. READ: I will assume that cattle are consigned to Mr. A, B, or C, who is a dealer at Norwich. On arriving at Norwich they should not, I think, be permitted to go into the market; the person to whom they are consigned should keep them by themselves till they have recovered.

Lord B. MONTAGU: You would require isolation, though not slaughter, for foot-and-mouth disease, pleuro-pneumonia, and scab?

Mr. READ: Yes.

The Duke of MARLBOROUGH then spoke as follows: Gentlemen, the Memorial refers to one point to which, as you are aware, the attention of the Government has been previously called, namely, the propriety of establishing a separate market in the metropolis for foreign cattle. We have felt that that is a matter of very considerable importance, that it is in fact, the first step, and the most important one to be taken, in order to secure the country against the re-introduction of cattle plague. The arrangements already in existence in the metropolis have to a certain extent the effect which it is hoped would be secured by the establishment of a separate market; but at the same time those arrangements are of a very expensive character, and they affect to a great extent all the traffic of the home stock throughout the country. Consequently our object has been to effect the double purpose of relieving the home stock from the restrictions which are at present imposed upon it, and to afford security against the re-introduction of the cattle plague; and I believe that that purpose cannot be as effectually accomplished in any other way as by the establishment of a separate foreign market as proposed in a Bill which I hope will receive the sanction of Parliament. As regards the suggestion that there should be a similar Act for the establishment of separate foreign markets at the different ports where cattle coming from abroad are landed, I would observe that that is a question of very great difficulty. The actual state of the case, too, in reference to this matter, does not at present appear to be generally known. In looking over the reports which I see from time to time, of the proceedings of different Chambers of Agriculture, I have noticed that there is a remarkable lack of knowledge on one point, namely, that there are restrictions already in existence, and in force at all the ports where cattle are landed, similar to those which are proposed for London. That they are not enforced by Act of Parliament is true; but they are enforced as effectually, though the arrangement may not be a permanent one, as if there were an Act of Parliament. This ought, I think, to be generally known. I have perceived that in Chambers of Agriculture it is constantly proposed that that should be done which has in fact been done for the last eight or nine months. I believe that is so, and yet there appears, I repeat, to be a very great want of knowledge on this subject. In fifteen or sixteen ports at which cattle are imported, no cattle are permitted to go into the country; but all are

slaughtered at the port. That arrangement is no doubt accompanied with a certain amount of difficulty, especially in hot weather. Complaints are made and reach the Council-office, that great inconvenience often arises from the necessity of at once slaughtering large quantities of foreign cattle, and having to send to the dead-meat market animals which, under the old system, would have been sent as live stock. But so great is the advantage to the country generally, and to the agricultural interest in particular, of the slaughtering of foreign cattle at the ports, and thus avoiding the danger of the re-introduction of cattle plague that I may say, for my own part, I am in favour of maintaining the restrictions. We have now had considerable experience in this matter; and, although there may be some inconvenience in the hot season, yet I do not think such inconveniences or disadvantages have attended slaughtering at the ports as to have rendered it necessary to abandon the regulation. It must be remembered, however, that what is now being done is tentative, and whether any such arrangement will be permanent remains to be seen. I think that if Parliament gave its sanction to the establishment of a foreign cattle market in the metropolis, that would be the greatest possible argument for extending the arrangement to the other ports. With respect to the third point in the Memorial, relative to extending the provisions of the Cattle Plague Prevention Act to other kinds of disease, that, I would remark, is a matter of great difficulty, and one requiring serious consideration. This subject will not be lost sight of by the Government. Although pleuro-pneumonia has not attracted the same amount of attention that cattle plague did, on account of its suddenness, rapidity, and fatality; yet I believe the insidious and slow progress of pleuro-pneumonia has been almost as destructive and injurious as cattle plague itself. The Government will bestow attention on these questions, and I trust that the remarks which have been made in bringing the subject under the notice of the Council will lead to beneficial results. I would add that I think any matter which the gentlemen composing the Farmers' Club, or other agricultural associations, may wish to bring before Parliament should be put in the shape of evidence before the committee of the House of Commons, to which the above subject has been referred, and I have no doubt that if that course be pursued, what is said will receive careful consideration, and the best results will follow.

In conclusion, his Grace observed that Mr. Coates, the Parliamentary agent for the Government Bill, would be happy to receive any communications relating to it, it might be thought desirable to make.

The deputation, having thanked the noble Duke for the reception which they had met with, then withdrew.

A Petition from the Club, embodying the several points of the Memorial, has been prepared, and signed by Mr. Sewell Read, as Chairman of the Club, by whom it will be presented in the House of Commons.

EAR-MARKING SHEEP.—A very numerously attended meeting has been held in Neath, relating more particularly to the ear-marking of sheep. The interest of this Farmers' Protection Association is evidently on the increase, which showed itself from the additional number of subscribers, forty-four new members having just enrolled themselves. In the course of the proceedings, Mr. Lewis Griffiths said he was glad to find so many present, for he considered that the old custom could not be done away with, and he was glad that the farmers had formed themselves into an association to protect themselves, and be ready to defend any action that might be brought against them for forming a mark upon ears of sheep, which he considered could not be avoided for protection, and if any one felt himself timid in making the necessary mark to the sheep he would come and do it for him (Hear, hear, and laughter). The custom was too old and necessary to be abolished, and as long as he had any recollection it had been adopted without any opposition until the recent case decided by the magistrates (Hear, hear). He was happy to become a subscriber, believing that a Farmers' Protection Association was required, to secure their general interests and welfare.—To the Editor of *The Cambrian*.—Sir,—Will any of your readers kindly inform the public, through your columns, by what Act of Parliament the ear-marking of sheep is prohibited and considered a cruelty? Yours, A MOUNTAIN FARMER.—*Ystradgynodog, Feb. 27.*

CENTRAL CHAMBER OF AGRICULTURE.

THE EDUCATION OF AGRICULTURAL LABOURERS.

A meeting of the Central Chamber of Agriculture took place on Tuesday, March 3, at the Pall Mall Restaurant, Cockspur-street, and was attended by representatives from a large number of local chambers.

The subjects entered on the agenda paper for consideration were numerous, including the Education of the Labouring Classes, the Metropolitan Foreign Cattle Market Bill, and Mr. Knatchbull-Hugessen's Trusts Bill; but, as will be seen from the following report of the proceedings, the discussion on the first of these questions was so full and protracted as to occupy the whole of the sitting.

The chair was taken at 11 o'clock by Mr. Jasper More, M.P. The Rev. Mr. Fraser, one of Her Majesty's commissioners, was in attendance, having been specially invited by the council of the chamber to address the meeting upon the subject of the education of the labouring classes.

After the minutes of the last meeting had been confirmed, The Secretary, Mr. J. A. CLARKE, stated that since the last meeting four new chambers had been formed, viz., the Devonshire Chamber, established at Exeter, the North Durham Chamber, the Peterborough Chamber, and the East Devon Chamber, established at Tiverton. He also stated that five new ones were in course of formation.

After some routine business, including the election of several new members,

The CHAIRMAN, in introducing the question of education, said he hoped the meeting would come to some decisive resolutions upon the subject of the employment of women and children in agricultural pursuits. The provincial chambers had fully discussed the question, and the resolutions which they had passed had rebutted the charge that farmers were indifferent to the education of their labouring people, had expressed satisfaction at the suggestion to make a grant for districts where the population was scanty, and had pointed out the desirableness of eliciting notions as to the age below which farmers ought not to employ labourers' children. One of the most important questions to decide was whether it would be an act of injustice to labourers' families to limit the age at which they should be employed, and he hoped the central chamber would express a decided opinion on this subject (Hear, hear). He trusted that Mr. Fraser, who had been invited to attend on that occasion, would be allowed to open the discussion; and, although the Government proposals were not before the Chamber—a fact which was to him a subject of regret—he hoped the Chamber would adopt resolutions which would reflect credit upon itself, and influence the discussion of the question in Parliament. He would now introduce to the meeting Mr. Fraser, the eminent commissioner and authority on that subject.

The Rev. Mr. FRASER said: Gentlemen, I am rather sorry that I have been introduced to you in such laudatory terms. I have no right to consider myself an eminent commissioner, but I am here to-day, in a certain sense, to represent the Commission appointed in the month of July last by Her Majesty to enquire into the employment of women and children in agriculture, simply with a view to the better education of children. I commenced my enquiry in July, and I left off, at the conclusion of the first stage of , at the end of January. Since the enquiry commenced I have reversed with more or less thoroughness the counties of Norfolk, Essex, Sussex, and Gloucester; I have been face to face with two local chambers of agriculture, the Norfolk and the Gloucestershire Chambers; I have heard the subject thoroughly discussed by the Cirencester Farmers' Club; I have myself held nearly 90 collective or parochial meetings in the different unions which I selected for my area of enquiry; I have been face to face with upwards of 1,500 gentlemen—landowners, clergymen, magistrates, farmers, and others interested in agricultural questions, with whom I discussed the question as completely as the time allowed. I think it may be best that I should state, as briefly as I can, the general upshot of the enquiry, and the conclusion which I have found most acceptable to agriculturists generally. The enquiry conducted by the Commission divides itself into

two parts: first, is it necessary to regulate the employment of women and children in agriculture upon any principles resembling those which have been applied to the regulation of the employment of women and children in manufactures? Secondly, how are we best to improve the education of the agricultural labourer's child? This second question subdivides itself again into two parts which are perfectly distinct, and which, I hope, will be kept distinct in the discussion that is about to take place: the first is how to maintain the schools, the second is how to secure the attendance of the children. I will say a very few words on the first part—namely, how far it is necessary to regulate, I do not say by the application of the same rules, but of similar principles to those which prevail in the manufacturing districts, the employment of women and children in agriculture. The Factory Acts have, as you are no doubt all aware, a two-fold object—a physical object and an educational one. The physical object is to prevent children from being employed at an immature age, and to prevent young persons and women from being employed for an exhaustive number of hours on any one day. I have frequently been told, in the course of my inquiry, that agricultural labour is very different from factory labour (Hear, hear). I hold in my hand a resolution, which was passed, not at the meeting which I attended, but at an adjourned meeting, at which the question was resumed, after my attendance, by the Norfolk Chamber of Agriculture. It is here said that the "farm work in which women and children are usually employed is certainly healthy, and is by no means excessive or laborious: with the exception of hay and corn harvests, and in the case of small boys scaring birds or herding stock, the time that women and young children are employed on a farm does not exceed eight hours a day." Now, I presume that you wish me to treat this question before you with perfect frankness—not to deal in any trivial words, or to flatter the agricultural body, but to state things as they have come under my own observation; and if anything which I may state should seem afterwards to require correction, I shall be happy to receive it. It appears that at a meeting of the Gloucestershire Chamber, held previously to the one which I attended, a resolution was passed declaring that where proper precautions are employed there is no objection to the employment of women and children in agriculture. To that principle I cordially subscribe; but as I told the Gloucestershire Chamber, whose President I am happy to see here to-day, the whole emphasis of that resolution depends upon the clause "where proper precautions are employed." The result of my own observation is, that proper precautions are not always employed; and I venture to state that, owing to the number of hours that women and children are employed, their labour is very often exhaustive. As regards the hay and corn harvests, I may remark that the Commission by whom I was employed does not attempt to deal with those exceptional seasons, or with the case of small boys scaring birds or herding stock. I may, however, observe that I think it often happens that when a boy is taken away from school to keep, as it is termed, though I should rather say to scare, birds, it is found that if he is to be of any use he must be on the ground at sunrise, and remain there till sundown, and the result is that, instead of being employed for only eight hours, he is on the ground, exposed perhaps in the month of March or April to the keen cutting winds that sweep across the plains of Norfolk, imperfectly clad and imperfectly fed, for 15 or 16 hours ("No, no"). Is it not true that such boys start for their work at five o'clock in the morning? (A voice—"They do, in Yorkshire"). I thought it was admitted that a boy must begin his bird-scaring at sunrise, and that he must not leave the ground till midday (A voice—"Practically that is not the case"). Then practically he can be of no use; for surely rooks are wide enough awake during the hours which I have mentioned. At any rate, it will be admitted that young boys are put to work at the earliest age at which they can be; and here lies the point of my observations on the subject—boys set to labour and exposed to all sorts of weather, at the age of eight or nine, are

not unlikely to be thus stopped in their physical development ; and I do not think therefore it would be any hardship for the Legislature, in accordance with what was done in the case of the Factory Acts, to fix a certain number of hours, say twelve, as the maximum during which a boy shall be employed on any one day on a farm. I have here the case of a boy, which I took down very carefully. This boy was employed as a waggoner, and had been so for three years. He leaves his home at five o'clock in the morning, and first walks a mile to the place where he is to get the day's allowance of cider. He then goes to the farm to work, and this makes a two-mile walk. He has to be at the stable at half-past six, and he does not go home until seven at night. That boy tells me that he has two meals in the course of the fourteen hours ; but there he was employed at 11 years of age, and he is, I believe, still employed, for 14 hours a-day, and I humbly submit that 14 hours a-day is too much to exact from a boy of 11. Here is another case which constantly happens, and I do not know how it is to be avoided, unless older boys are employed for the purpose. A farmer has to send his young waggoner with a load of corn or to bring home a load of coal. The boy starts early in the morning, as early as possible after twelve, so as to avoid Sir George Jenkinson's great difficulty about the turnpikes. He does not get home till 5 or 6 o'clock in the afternoon of the same day ; and by the time he has cleaned his horse down and reached home it is 8 o'clock. This boy told me that he dislikes road work more than any other kind of work, and that he was generally 14 or 15 hours in going from the farm to Gloucester and Tewkesbury market and back (A voice : "What is his age?"). He is now 14. I certainly think it would be no hardship for Parliament to enact that a boy of that age should not be employed for more than 12 hours. I have mentioned these cases to show that there are instances in which "proper precautions" are not applied to the labour of children and young persons. I now pass to the next question, How the education of children engaged in agricultural labour may be improved. I am glad to find that in all the resolutions of the local chambers of agriculture on this subject which I have read, there has been a uniform admission that the position of the agricultural labourer with reference to education is not satisfactory, and not what we might have hoped it would be, considering the efforts which have been made to promote education during the last five-and-twenty years. The cause of the failure of these efforts is not far to seek. I notice that the Norfolk Chamber admit that there are many small parishes without a school, and they state that in the sparsely populated parts of the country there is and ever must be a difficulty in providing school-houses within a reasonable distance for all the population. I notice further that they say that no doubt children, and especially boys, are taken from school much too young. They are prepared to offer no objection to a Bill prohibiting the employment of children under nine years of age in agriculture ; and they think that if attendance at school should be insisted upon after the boy has commenced labour, the best plan would be to require the boy to attend school for a certain number of consecutive hours during the leisure part of the year. They are guilty of some little inconsistency. In one clause of the resolution they say that if you prohibit the employment in agriculture of children under nine years of age, means must be adopted to ensure that a child shall really attend school and not be kept at home ; and in another clause they declare that compulsory education in the mildest form will probably lead to an education rate, and this Chamber protests against an education rate being levied exclusively on real property (Hear, hear). I will first deal with the question how schools are to be maintained. Are they to be maintained by means of a rate? or shall we trust, as we have hitherto done, to the voluntary system, supplemented by a Government grant? or shall we try, in accordance with the recommendation of the Royal Commissioners in 1861, the experiment of a Government grant supplemented by a moderate rate in aid, and that again supplemented by the voluntary system of the children's pence? Some gentlemen may have read a letter of mine published in the columns of the *Times* last spring, in which I distinctly recommended the latter plan. I there proposed that the Government grant should be one of the elements of the support of the school, and that there should be a liberal rate in aid, dealing with every school exactly as it found it, not overthrowing the

constitution of any existing school, nor substituting for what may be called a national religious what may be termed a secular system, but supporting that school, just as the county bridge and county police are supported, by means of rates. I estimated that a rate of 2d. in the pound would be sufficient for the purpose. That rate would not, in my opinion, be entirely lost to those who paid it ; for I hold that education is one means—I do not say it is the only one, for better cottages may be a prior condition—but I hold that education is one of the most powerful levers that can be employed to elevate the condition of the labouring classes, and thereby to diminish pauperism. The educated labourer is not the man who throws himself most frequently upon the rates, and I believe that a twopenny rate, enabling you as it would to pay 7s. 6d. a head for every child in attendance at a rural school, would be an enormous additional money-power brought to bear on the elevation of the labouring classes. The present condition of affairs as regards schools I believe to be this. Most districts in the country are fairly supplied with adequate school buildings, and do not want any new school. In 1861, when the Duke of Newcastle's Commission finished its exhaustive inquiry into the state of education, it was found that, for every 145 children for whom school accommodation was provided, there were only 100 children attending ; in other words, there was provision for about 50 per cent. more children than were actually receiving education. Unhappily, the schools have not all been well distributed, and therefore there may be a necessity for redistributing the school accommodation. I do not agree with the Norfolk Chamber of Agriculture that it would be difficult to plant a school in every district within reach of the children of labourers. I have not met with any district in England so sparsely populated that you could not plant a school for 50 children which would draw the children within a radius of two miles ; and I do not consider two miles too far for children six or seven years old to walk to school. As to the character of the existing schools, I think I might give a rough estimate of them in this way. About one-third of them, about 33 per cent., have sound and efficient teachers, and are doing what I may call a good stroke of work. About a third more have tolerably good teachers, being in fact something like the old type of dame schools, but a little more efficient, having a little more interest attached to them and a little more money thrown into their exchequer. The remaining third I take to be places of education only in name. The real problem, then, is how to raise adequate funds to secure useful and efficient schools to meet the requirements of the country. At the present moment the position of England as respects education is not a thing to boast or to be proud of. We are distinctly behind other nations of the earth whom we are apt to rank as inferior to ourselves. We are distinctly behind the United States of America, Prussia, Switzerland, Holland, and I believe I may add Sweden ; and if we do not take care, we shall soon be behind France. At one of the meetings which I attended in Gloucestershire, a gentleman who had spent thirty years of his life in America told me that there was scarcely a person there who could not read and write. Now the necessary expense of maintaining a school is a matter with which all persons are not familiar. The Duke of Newcastle's commission put it at from 25s. to 30s. per child per annum in average attendance. That is perhaps an excessive estimate. I think that a school could be maintained under a mistress in good condition at an expense of 21s. per head. My notion of the manner in which that should be raised is this. Let 7s. come out of the Government grant to be awarded to the children according to the merits, tested by an examination ; let 7s. more come out of a rate—and a rate of 2d. in the pound would in most cases be sufficient to provide for each child in average attendance ; and let the other 7s. be made up partly by the school pence, which would amount to about 3s., and partly by voluntary subscriptions, which I believe would always be forthcoming in adequate amount, especially if the voluntary subscribers had a share in the management of the school. You would, I think, then have a fund which would be sufficient for the purpose, and would be raised in very fair proportions. I noticed that the resolution of the Norfolk Chamber of Agriculture on this subject was received with marked approval in this room. That Chamber protests most earnestly against a rate-in-aid being levied exclusively upon the real property of the kingdom. I understand that resolution to refer

to a system which would be very different from that which I would suggest, which is, that the compulsory cost should be borne by all the local property more or less connected with the school (Hear, hear). I certainly think any other arrangement would be most unfair (Hear, hear). The whole of society has an interest in the education of the lowest class, the national prosperity and wealth being intimately connected with the social condition of that class; and I consider that the wealthy fund-holder and the railway shareholder, being interested in the stability of the country and in the stability of credit, which rests ultimately on the state of the relations between capital and labour, ought to contribute towards the education of the agricultural class, as well as those who are directly connected with the land. But while I admit this, I must also press upon your attention the fact that the landowner and the land occupier are especially interested in the condition of the school provided for the education of that class who have made the land what it is to the owner and the farmer (Expressions of dissent). I maintain that the capital employed in the land has a special interest in the education of the labouring population connected with the land. Let me here read to you some remarks made by a gentleman who always commands attention, if he do not secure assent. At a recent public meeting this gentleman said:

"I should not ask the Government, either by grants or by rates, by one or the other, or by the two combined, to do anything for public education except for that class of the people whose condition is one of, I will say, to a great extent deplorable ignorance, and exhibits very great neglect on the part of Government in past times. The mass of the labouring population, whether in town or country, as all know perfectly well, notwithstanding the number of figures to the contrary, is not in a satisfactory condition with regard to its education. I believe it is infinitely below that of Prussia, and I think also of Switzerland; and infinitely below that of the corresponding class, if there be a corresponding class, in the Northern States of the American Union. Now suppose we had in this country all the working people educated—I mean thus far, that every boy and girl among them, as near as could be, should understand how to read, should comprehend what was read, should go through the ordinary rules of arithmetic, and had that little general knowledge which every child picks up at school, such as a little knowledge of history and geography, and probably a little knowledge of drawing—suppose that that were universal among all the children of the labouring classes, what else would be necessary? On the general subject of education I should not recommend much, on account of the feverish agitation which exists just now. This question of education is not one to be disposed of by any spasmodic effort. It is a question of prodigious magnitude and of the greatest difficulty in this country, when you consider, I will not call them our theological, but our Church differences, and the varied views men hold. I should recommend rather what I call a steady progress than a great rush; because in making a great rush upon this question and introducing measures based upon what I look at with great doubt, a compulsory and forced attendance at schools, I am not sure that you will not produce among the people a reactionary feeling, which would defeat the very object you have at heart. Suppose you establish a great and broad system, and proceed to lay considerable and heavy rates upon a people who at present do not much appreciate education, and you establish in your towns a sort of truancy police to look after the children who do not go to school. If you bring too much weight to bear on the people before they are sufficiently enlightened to approve your efforts, you may find that there is a great reaction, and your difficulties become almost, if not altogether, insuperable. The great mass of your children now are uneducated. If you propose at once to create a great revolution of that kind, I am certain you will find that those for whose benefit you are acting will not give you that co-operation, without which it is impossible that you should succeed. I should recommend a more gradual assault on the ignorance of the country, and that we should survey the institutions already existing, and as much as possible arrange that which is new, so as to dovetail with that which is old, and gradually, it may be in a few years, come to that which exists in the New England States of the American Union, where throughout the whole country there is scarcely a boy or girl who does not receive a sound education. I am not speaking of mathematics and

classics: these are the luxuries of culture. I am speaking of the necessities of education: that persons should learn to read and to write, to think, and to do sums in the ordinary rules of arithmetic, and have that general common school knowledge which the facilities of almost all children enable them to receive, but without any attempt to give them those luxuries which may be reserved for others. In endeavouring to extend the means of education for the people, we should go on with what I would rather call a steady wisdom than with a precipitate and feverish action which may raise great difficulties in our path." (Cheers).

Those are the words of Mr. John Bright, and I think that when such sober, moderate, and sensible views are held by a man who has hitherto been considered the representative of most extreme opinions, and not very favourable to the class which is represented by the gentlemen around me, we may rest assured that this question of the education of the agricultural labourers will receive a calm and dispassionate consideration at his hands, when it comes to be discussed in Parliament (Hear, hear). But, gentlemen, when we have supported our schools, we have done nothing towards getting the children to attend them. That is really the cardinal and most difficult part of this question. The irregular attendance of children and their early withdrawal are far more serious evils, being the great cause of what we might call the "deplorable ignorance" of our agricultural population, than anything else. I have been told over and over again in the course of my inquiry that things are going on very well, and that we had better let well alone; but I find that the Norfolk Chamber of Agriculture endorsed the opinion that there are a great number of parishes in which schools do not exist, and that children are removed from school at far too early an age. The school age has lessened by one-twelfth within the last 11 years, and there are still only seven out of every 100 children in the inspected schools, which are the best schools, at the present moment only seven out of every 100 children remain at school for five years. I do not mean to say that there is not a greater proportion of children, nominally, at school for five years, that is children that go to school at five and remain till ten; but when we come to look into the register, and ascertain the real state of things, we find that, what with one little job or another—what with the deductions for potato-digging and planting, hop-picking, fruit-picking, and so on—children, instead of being kept at school for five years, are practically only kept for about two or three, and those not two or three consecutive years, but two or three years extending, at most irregular intervals, over five years. How to remedy this is, I take it, one of the chief problems that we have to solve. Another point that demands our attention is the very small extent to which the Government system has hitherto penetrated in the country. From the last Report relating to the subject, it appears that of 8,219 parishes in England with less than 500 inhabitants in each, containing in the aggregate 1,865,400 souls—consisting, I presume, entirely of agricultural population—only 924, or less than one in nine, are taking advantage of the aid which is offered by the Government on the same terms to all parishes alike; of 2,851 parishes with a population of between 500 and 1000, only 1,038, or less than half, are receiving aid from the Government. I do not think, therefore, there has been that amount of effort on the part of the voluntarists that they ought to have put forth, in order to secure for the schools the money support which they had a right to expect.

MR. ALBERT PELL:—Are those parishes which are mentioned ecclesiastical parishes, or parishes having civil divisions?

THE REV. MR. FRASER: I cannot answer that question. They are called "parishes" in the Government Report; and though there may be a slight difference between the two, it would not be very material. I quite feel that the real difficulty of this question turns on one point, and one point only; and it is a point which has pressed very close home to my feelings as well as to my reason all through this inquiry. It is a point of which I feel bound to make the most distinct mention in the Report which I shall have the honour to lay before the Commissioners who have employed me; I allude to the poverty of the agricultural labourer. The low wages which the agricultural labourer receives in many parts of England are not sufficient to allow him to dispense with the earnings of his children (Hear, hear). I quite feel that it

the Legislature were to impose an absolute restriction—a restriction without any accompanying dispensing power—that even if the Government were to fix upon such a moderate age as 10, which was the age selected at a meeting presided over by Mr. Holland, in Gloucestershire, and to say that no boy under 10 years of age should be employed in agriculture—I quite feel, I say, that an absolute restriction of that kind might work injuriously, the father being the only breadwinner, and there being four or five boys unable to earn anything towards the support of the family (Hear, hear). How is that difficulty to be got over? The wages question is the problem which has vexed my mind more than any other with which I have had to deal in the course of my inquiry; and although I feel that that is a question which must be approached with considerable delicacy in an assembly like this, composed mainly of employers of labourers, yet I should not express myself with perfect frankness if I did not say what is upon my mind in reference to this most important subject (Hear, hear). I want to know why it is that, while an agricultural labourer in Northumberland is at the present moment receiving 18s. a week, an agricultural labourer on many farms in Gloucestershire, Herefordshire, and Worcestershire is receiving only 9s. a week (No, no). I can prove by scores of instances that there are labourers receiving only 9s. a week in the tract of country bordering on the three counties of Herefordshire, Worcestershire, and Gloucestershire (A voice: "There are allowances"). Yes, there is an allowance of three quarts of cider a day, being equal to 1s. 6d. per week; but that is the sole allowance. (A voice: "What about the harvest?" followed by cries of "Hear, hear"). I am not speaking about what a man may pick up at harvest-time. I have it on good authority that in the Cotswold country the total average wages of a labourer does not exceed from £30 to £39 a year (interruption).

The CHAIRMAN observed that Mr. Fraser appeared to him to be in order.

Sir G. JENKINSON thought that if such statements as had just been made were allowed to pass without immediate contradiction, injustice might be done to some person concerned.

The CHAIRMAN remarked that there would be an opportunity of replying to Mr. Fraser presently (Hear, hear).

The Rev. Mr. FRASER: I am quite aware, as I before stated, that I am treading on delicate ground, but still there is a vital part of the question before you. I quite admit that if it is to be supposed that the wages of agricultural labourers are always to remain at the present figure, or at the figure at which I know they stand in many parts of England, that must greatly complicate the difficulty of dealing effectually with the education question. I am, however, prepared to hear any contradiction of my statements that may be made by any gentleman present; and if it shall appear that I have made any misstatement I shall be quite ready to withdraw it (Hear, hear). When I was interrupted I was going to say that in Norfolk the wages, including the harvest earnings, amount to from £35 to £38 a-year, and that in Sussex they amount to from £40 to £44; but as regards certain parts of the midland counties, and particularly in Gloucestershire, Worcestershire, and Herefordshire, I will stake my reputation for accuracy on the statement that at the present moment the wages paid are not more than 9s. a-week, exclusive of 1s. 6d. a-week for cider. Taking in the harvest and piece-work, a man may earn from £30 to £33 a-year; but when the best is said—when the whole is told, there still remains but £33 or at the most £35 a-year, and that creates a very serious difficulty in dealing with this question of education in cases where the father is the only bread-earner and there is a family of four or five children to be provided for. I hope, therefore, this will be one of the main elements in the discussion whenever the question shall engage the attention of Parliament. Farmers, generally, have told me that the employment of boys under ten years of age is of no practical value at all. I have before me a statement showing the amount of wages paid by one of the largest and most affluent farmers in the county of Norfolk, one who cultivates his land in the best manner, between the 27th of July, 1866, and the 19th of July, 1867. This gentleman occupies something like a thousand acres of land. This statement gives the rates which he paid during that period to boys, girls, and women. To women, and to boys and girls over fourteen years' of age, he paid £62; to boys and girls between ten and fourteen he paid £40; and to boys and girls under ten he paid £2.

Although he paid £104 to those three classes of labourers, only £3 of that amount was paid for children under the age of ten; consequently there would probably be no appreciable loss to the parents, and certainly none to the farmer, if the Legislature were to say that no child should be employed in agriculture under ten years of age. Having come here rather to learn than to speak, I am not prepared to say how far the principle of the Factory Acts might be usefully applied to the education of the children of agricultural labourers. I have been told over and over again to such an extent that I must accept it as an axiom, that the application of either of the two forms of what is called the "half-time" system, under which a boy would be at school half-a-day and at work the other half-a-day, or one set of boys at school one day and another set another day, the alternate days being occupied in work, is utterly inapplicable to agriculture (Hear, hear). It is not, however, universally inapplicable; for I myself have met with cases where both of these plans have been tried, and found to succeed; but, then, it was tried under exceptional circumstances, by gentlemen in the position of Lord Rayleigh, in Essex, for example, who occupies 2,000 acres of land close around his house, with the village and school in the centre of the parish, and who is, in fact, "monarch of all he surveys." What he does, therefore, should not be taken as a type of what the ordinary farmer can do (Hear, hear). I am prepared, then, to admit as true the assertion that neither the half-day nor the alternate day system would be practicable in agriculture. The Norfolk Chamber, however, appeared to suppose it would be practicable, when they recommended, if Parliament adopts a prohibited age, that the child should attend school for a consecutive number of days during the leisure parts of the year. In Gloucestershire, the farmers said they thought that labour might be prohibited in the case of children under ten years of age, and that school attendance might be secured in the winter months, including the attendance at Sunday and night-school, to the extent of one hundred and fifty hours. Now, if children were prohibited from going to work under the age of ten, and were required to attend 150 hours at school during the winter months, between the ages of ten and twelve; if, too, they attended regularly during that time, and school-life was never interrupted by demands upon their labour, except in the harvest months (I should be content to rest there)—I am sure that results would be arrived at infinitely superior to any that we have yet achieved, and that this country would be placed in a position which it has never before occupied (Hear, hear). What I feel in regard to the whole question is, that there requires to be, not one influence alone, but a multitude of combined influences brought together to bear with a mighty leverage upon the condition of the agricultural labourer (Hear, hear). He wants better schools, and he wants better teachers. He wants those schools to be more liberally supported. He wants many more people who live in close proximity to those schools to take an active interest in them. He wants the employer of his children to take such an interest in him that his children shall be enabled to attend schools as regularly as possible. He wants some deeper and more abiding interest to be awakened in the mind of the labourer himself in the welfare of his offspring. And he wants an infinitely better home (cries of "Hear.") It is the fashion to say that the employment of women and girls in field-work is demoralising; and I have been glad to find that farmers, almost with one voice, say and commission me to represent this as their own opinion, and that they wish to discourage, by every means in their power, the employment of young unmarried girls on their farms (loud cheers). At the same time, I do not like to throw the burden of all the immorality that exists in the agricultural parishes upon the employment of women and children in the fields; nor do I admit that the immorality in the rural districts is greater than that which prevails in the manufacturing towns (Hear, hear). The gentlemen who own the land, and have neglected to stock it with a sufficient supply of labourers' cottages, provided with suitable chamber accommodation, to enable a man with a mixed family of boys and girls to bring that family up with decency and modesty, must be compelled to bear their share of the burden and reproach of that demoralization (loud cheers). I am happy to say that there is a tremendous Nemesis resting on the creators of close parishes. Those gentlemen who, years ago, swept every cottage from the face of their land, and thrust the

labouring people, no matter how, into the open parishes of their neighbours, now find that they have not only to bear their fair share of the rates, but have placed themselves at a great disadvantage when they want a tenant for their farms (Hear, hear). I am told that the very first inquiry a farmer makes when he applies for a farm is not What are the rates? because he knows that they are equally distributed over the union, but What cottages can you offer me? and What is the supply of labour? (Hear, hear). I hope, therefore, that this great and crying evil is now in course of being remedied, and that the landed gentry will wake up to a conviction of their responsibility in respect of that important matter, the better housing and homing of the people who cultivate the soil (cheers). What I wish to see is the influence of all classes brought to bear upon the condition of the agricultural labourer. He wants help. He is trying to rise; but he has to struggle against a number of peculiar difficulties. We want to call forth not only the influence of the clergy, which is generally forthcoming, but the influence of the employer, the teacher, and the landowner. We must all shake off the drowsiness and apathy that have been upon us so long. And if we can only awaken a genuine public spirit and living interest in this great and vital question, we might dispense with all legislation, with rates, with compulsion, with prohibitions, and with restrictions (Hear, hear). The work would be done, and more, it would be well done. Gentlemen, I have now only to thank you for the great patience with which you have listened to my observations, and I repeat that if I have made any statement the truth of which I cannot vouch for, or which you can disprove, I shall be most willing to retract it (Hear, hear).

MR. ANDREWS said he was at a loss to understand how a gentleman of Mr. Fraser's high intelligence could ask the question why the price of labour was different in one county from what it was in another. Surely, everybody knew that the scale was regulated, and must be regulated throughout the country by the supply and the demand; and he might as well have asked how it was that labour was scarce and wages high at the west end, whilst it was plentiful and low-priced at the east end of London (Hear, hear). With regard to the educational question, what they had now to deal with was primary education, the education of the boy, the education that would tell upon him some ten or fifteen years hence. When, however, they had completed the education of the boy, how would they complete the education of the man. In his opinion it would be by means of his political leaders and the cheap newspapers. The first thing which the working man really wanted to know in this country was the true nature of the relations between capital and labour, and he should be made to understand the question which Mr. Fraser had put—why it was that labour was dear in one place and cheap in another. For his part he held that no capital, however invested, whether in the land, in trade, or in anything else, could return a profit to the owner until it had employed labour, and that consequently there could be no radical antagonism between labour and capital. The more the capital employed, the better was it for the labourer. Then the labourer should be taught the true principle of political economy to which he had adverted. He would not then complain of the rate of wages ruling differently in different places, for he would see that an advance of wages could only be produced by an increase in the demand for labour and the lessening of the pressure upon the capital embarked in the employment of labour. Coming to the question where the means of paying for the primary education of the labourer were to come from, Mr. Fraser had frequently remarked in the course of his speech that they ought not to come out of local funds, but out of some general fund, and he (Mr. Andrews) knew of no other means of doing this than laying an income-tax or placing the charge on the consolidated fund. He need not enumerate the heavy burdens which were already borne by local taxation. All he would say was that he could not see the justice of adding to them a charge for the general purposes of education, seeing that when a boy had been educated, it would be impossible to confine him to the parish in which he had received his education. Would he not flow into the great cities and manufacturing centres? And would not these places receive the benefit of his education as well as the agricultural districts? Why then, should a great capitalist like Baron Rothschild, for example, escape from contributing to the education fund which was to raise the position and social standing of the masses? He had

his capital invested in England as well as in other parts of the world, and he would derive benefit from the education of the labourer as much as the farmer in the parish which paid a local rate. In making these remarks, he (Mr. Andrews) did not mean to say one word against the general education of the people. On the contrary, he thought it would be most valuable, and that day's discussion would do much good, by practically informing country gentlemen correcting the inaccuracies of Mr. Fraser. Almost all that gentleman's remarks in connection with labour, had been addressed to the point of agricultural labour. Now, he (Mr. Andrews) lived within a few miles of a town in which the glove manufacture was carried on, and sometime since when driving thither, he was accosted by a little girl on the road who asked him to permit her to ride. The child was about ten years of age, and was going to the town with her glove work. In answer to the inquiries which he put to her, she told him that her earnings from the occupation were about 2s. a-week, that the time employed to enable her to earn this was from six in the morning until eight at night; that she was the eldest of nine children: that her mother worked at gloving, but with so large a family could earn no more than 1s. a-week, and that her father could only earn 10s. a-week. Let the meeting reflect upon that case in connection with its bearings upon compulsory education. How could that family afford to do without the 2s. a-week earned by the child ten years of age, and working fourteen hours a-day? How could they be expected to suffer her to go to school and diminish the income of the house and the means of living to that extent? If there was to be a compulsory education, whether it was in the department of agriculture or of manufacture, how was the difficulty to be met of providing food and clothing for the poor before shutting them off from earning it? In his opinion any compulsory system of education must at the same time be supplemented by some assistance for their physical wants (Hear, hear).

MR. ALBERT PELL said he came prepared to move a resolution on the subject, and it was the one which had been adopted by the Leicester Chamber of Agriculture. He admitted, however, that he did not entirely concur with it himself, because he would have carried it a little further than it went. Still, it had received the full and general acceptance of the Chamber, at a meeting which comprised men of all classes interested in agriculture, large landowners, considerable employers of labour, a fair sprinkling of the clergy, and of others interested in the abstract question of education. In Leicestershire, then, deferring other considerations for the present, they had arrived at this point, as expressed in the resolution, and it was very much the same as had been enacted by the Norfolk Chamber, and he presumed that it would be pretty generally endorsed by the agricultural community generally: "That it is expedient that children under the age of nine years be restricted from employment in agriculture." But he would have gone further and said, that above that age the employment of young persons be wholly unrestricted by legislation (Hear, hear). He thought there were certain reasons which went against their accepting or consenting to any legislation in respect to the employment in agriculture of young persons above nine years of age, because the circumstances of these children were not identical with those of children employed in manufactures. If a longer period of life were devoted to the education of a child engaged in agriculture than to that of a child employed in manufactures, where the child was eight years of age, the last year—namely, the year between eight and nine, which would be the most valuable year—would very nearly, if not quite, make up for the deficiencies and disadvantages which might arise from the child having an intermittent or periodic education after he left school. Of course, he was excepting all those parts of the year, when education would be entirely suspended; and it was understood by the Chamber that during the harvest months and other busy seasons education would be suspended entirely. If, then, they consented to children being prohibited from working until they were nine years of age, they would have made a grand step in the direction of education for the poor, and perhaps the most feasible one that could be entertained at that meeting; whilst it would only create embarrassment to proceed to legislate respecting the years which followed the ninth year of age (Hear, hear). But here occurred this difficulty—the Factory Acts stopped at eight years of age; and let them take the case of a parish where the children were partly employed

in manufactures and partly employed in agriculture, of which numerous instances were to be found in Leicestershire; what would the child do if there were one system in operation which stopped him working until he was eight years of age and another which stopped him at nine? (Hear, hear). In such cases he supposed it must be left to the parent or others interested in the child to make election whether the future life of the child should be devoted to manufactures or to the more simple operations of husbandry; and he could not say that the child would suffer if the latter were chosen. To anything like compulsory education, and to anything in the nature of a rate for education he (Mr. Pell) was directly opposed (cheers). Mr. Fraser had recommended and laid before them with great ability the advantages of a small rate in aid, amounting to about 2d. in the £; and he wished that rate to be levied over the wide area of a county, or a smaller area consisting of two or three united parishes—

Mr. FRASER: I recommended a union rate.

Mr. PELL: That was already adopted in principle with regard to union schools, though it had never been acted upon. Consider, however, for a moment what they would have to abandon for the sake of this 2d. in the £. They would have to abandon that grand principle which was paramount in this country, of every man doing, without stint or compulsion, as far as his conscience went, that which he believed to be due to his neighbour. Under the operation of that principle schools were largely maintained and well supported at this moment. If they went into compulsory or ratel education, he would say let us go into it to the full (Hear, hear). Let A and B and C and D pay according to their means and their property: no half-giving on one side and half-rating on the other, but pay the whole according to their means, by the machinery of a rate. And then with regard to the incidence of the tax and the mode in which it was to be expended, he was sure that Mr. Fraser would support him when he stated that the cost of educating a child in one district was very different from the cost of educating him in another. In a Parliamentary paper—he believed it was one of Mr. Chadwick's—he read that in schools containing less than a hundred children the cost of educating them was about £3 10s. per head; whilst in schools with four hundred children and upwards the cost fell off to about 17s. per head. See, now, how hard a small parish would be hit—a parish say having only something like forty or fifty children in its school—if the principle were adopted of taxing on the same area and after the same manner in which the poor-rate was raised all the property in that parish for the maintenance of the school (Hear, hear). That, in his opinion, was a very strong argument against the levying of any large amount of local taxation for the support of schools. Let it not be forgotten, too, with regard to the nature of the education given, that if the rating system were introduced, a conscience clause must follow (Hear, hear). And whatever might be said of the existing conscience-clause, the question what the conscience-clause might be twenty or thirty years hence was, to his mind, very terrible to reflect upon (Hear, hear). It might be a clause so wide as to admit anyone within its scope except a Christian; and he held that no education—whatever it might do for the manufacturer—would suit the simpler and more natural habits of life in the country if it were divorced from the religious element (Hear, hear). In saying this, he was not speaking as a churchman only, but he knew that his views were endorsed by dissenters in thousands. If, then, they were to “render to Caesar the things that are Caesar’s,” he hoped that in this matter the Chamber would not forget to “render unto God the things that are God’s” (cheers). In conclusion, Mr. Pell said—“That it is expedient that children under the age of ten years be restricted from employment in agriculture.”

Mr. WILLSON (Leicestershire) seconded the motion.

Mr. DUCKHAM (Herefordshire) proposed, as an amendment to the motion of Mr. Pell—“That, in the opinion of this Chamber, no child should be employed in agricultural pursuits who is below the age of ten years; and that, beyond that, no necessity exists for legislative interference with women and children employed in agriculture.” In doing so, Mr. Duckham said he felt that the age of ten years was certainly quite early enough to exact labour from young children; and the only difficulty was how the labourer was to support a large family up to that age. Mr. Fraser had gone at considerable length into that; but there were one or two points on which he dwelt

respecting which he (Mr. Duckham) would like to say a few words. One of these was, that in Mr. Fraser’s opinion the boys were not to be kept to scare crows. Now, in his (Mr. Duckham’s) part of the country they were eaten up with crows, and in many districts did not know what to do with them; nevertheless, he could point out game-farms where the tenant dared not fire off a gun, and where nothing must be laid to destroy the crows. Unless, therefore, small children were employed to frighten away the birds on such estates, a very serious national loss might ensue. When Mr. Fraser spoke of children being so occupied for sixteen and seventeen hours a-day, he (Mr. Duckham) ventured to say, “No;” and he was prepared to maintain that the statement was an exaggeration, and obviously so, because in the months of March and April, when the necessity for thus employing children was greatest, the sun did not rise so early or set so late as to admit of their seeing the birds for so many hours. He was pleased at hearing Mr. Fraser dwell so strongly upon the need which existed for better cottage accommodation; but that any employer of a boy should require him to walk a mile to fetch his cider, and then to walk a mile and a-half to his work, was too absurd to be regarded as other than a rare and exceptional case.

Mr. FRASER observed that he had only referred to it as an exceptional case.

Mr. DUCKHAM: But the press were apt to take up these exceptional cases, and on the strength of them hold up the farmers of England generally to public obloquy. The case of the boy, too, to whom Mr. Fraser had referred as going to fetch a load of coals or to deliver a load of corn was also, he presumed, an exceptional one. For his own part he entertained the strongest aversion to sending his labourers on long journeys, and never thought of their going to work before six in the morning, or working after six in the evening, unless it was the men whose business it was to attend to the live stock; and out of that period the usual time was allowed for breakfast and dinner. Consequently, the amount of labour was reduced to ten hours, instead of being sixteen or seventeen hours a day. With regard to the question of a rate in aid, the education of the people was not a local but a national question, and ought to be so treated. He was at a loss to understand therefore why one portion of the wealth of the country should contribute to it, and the rest be left comparatively free. The occupiers of the soil and their landlords in the mansions all paid to the Consolidated Fund; why not use that fund then as the means of providing for such a great national need? (Hear, hear). As a farmer himself he did not hesitate to say that it was a disgrace to the country that any portion of the community should stand up in the face of God, and be unable to read his word (Hear, hear). Still, he contended that the whole wealth of the nation, and not one-half, should be available for relieving us from that reproach. The rate in aid was a half-and-half affair. He was confident that it would not work well; and he recommended that the charge should be met from one source only. It was suggested by Mr. Fraser that the twopenny rate should be raised as a union rate; but how would that operate in his (Mr. Duckham’s) union, where there were many persons who employed labour upon a much larger scale than he did, and were consequently more deeply interested in the mental cultivation of that labour than himself, the labour he employed being of a simpler character than that engaged in manufactures; yet these people were rated at one-tenth of his assessment. Feeling that ten years of age was early enough for the tender limbs of young children to be called upon to earn wages, and that before that time a child had better be employed in learning to read and write, and acquiring the first four rules of arithmetic, he begged to submit his amendment.

The CHAIRMAN holding that the latter part of the amendment which set forth that, beyond providing that no child should be employed in agricultural pursuits below the age of ten years, no necessity existed for legislative interference, was informal, at the suggestion of Mr. Wilson that portion of the amendment was withdrawn.

Sir GEORGE JENKINSON feared that unless gentlemen had the opportunity of criticising the able and exhaustive speech of Mr. Fraser, a very unfair impression would be produced out of doors as to the amount of blame which was to be saddled upon the shoulders of that unfortunate class, the agriculturists of this country. According to Mr. Fraser all the evils which the agricultural labourer now endured were caused

entirely by the class above him. But if the subject were properly investigated, and the instances cited by Mr. Fraser fairly examined, he believed that no such inference could be supported (Hear, hear). In his view of the matter, it was advantageous that the present discussion had preceded the announcement of the Government plan, and for this reason, that he had always found that the opinions of a large body of men like the Central Chamber of Agriculture constituted such a moral pressure upon any Government by its influence with the members for counties, that they could not be disregarded by the Government in the preparation of any measure which might be introduced. Now the opinions which he had been able to gather from the various discussions he had attended as receiving the greatest favour at the hands of the farmers were these: that they were opposed to any compulsory measures for the purposes of education, and to the levying of a local rate (Hear, hear); that they were favourable to a Government grant for education from the Consolidated Fund, and that such grants should be more liberal in amount, and accompanied by less restrictive conditions (Hear, hear.) And he believed that if these points were fairly considered by the Government, and if legislation took that line, many of the difficulties referred to by Mr. Fraser would speedily vanish. It was a remarkable fact that the sum annually contributed in the shape of school fees exceeded the annual amount contributed by the Imperial Treasury. In England, during the year 1866, the amount derived from voluntary subscriptions was £310,000, from the Treasury £322,000, and from school-pence £349,000. It thus appeared that in the inspected schools in England more than one-third of the total expense of the education given was derived from the school-pence paid by the parents of the children. That was a fact which spoke well for the labouring-classes (Hear, hear.) And he held that it constituted a source of revenue that ought not to be lightly regarded, and certainly not abandoned, but rather should be more liberally supplemented by Government grants from the Consolidated Fund.

Mr. FRASER asked what was the Hon. Baronet's authority for those figures?

Sir GEORGE JENKINSON: They were copied from the *Pall Mall Gazette* into the *Daily News*, of January 15th, 1868. It had been admitted by Mr. Fraser that all classes of property ought to contribute to the burdens of the country, and that was the argument which he himself had always relied upon in relation to turnpikes and some other burdens, because he did not think it fair that the owners of £800,000,000 of funded property should be exempt from contributing one penny towards the various local burdens (Hear, hear.) Considering what those burdens were which now pressed exclusively upon the agricultural class, and that other burdens were likely to be placed upon them, such as the building of new cottages and the maintenance of the turnpikes and highways, whilst funded property was left free from contributing to them, he contended that the Legislature ought to pause before it laid the further burden of an education rate upon the shoulders of that class (Hear, hear.) The difference between the children in manufacturing districts and the children in agricultural districts did not seem to be fully appreciated by Mr. Fraser. The Factory Act was passed because the children were employed at night as well as by day, and because the hours of factory labour were practically unlimited and unrestricted. Being under shelter, and supplied with gaslight, there was really no limit whatever to the employment of women and children in factories. Now that, he need scarcely say, was not the case with agriculture. The period of work in the field was limited by the daylight, and by the state of the weather; and no labourers, whether adults or children, were kept out to work in bad weather or in the winter months. In the homestead they could not labour by candle-light on account of the danger from fire, and in practice all farm operations were terminated and the cattle housed at the close of the day. Moreover, from the month of November to the month of May; little more than eight hours of actual labour could be performed, after allowing for meals. He did not think, therefore, that it was fair to compare the agricultural with the manufacturing interest as regarded the restrictions required by the Legislature. Here he would like permission to ask Mr. Fraser a question. That gentleman had referred to the case of a boy who had been employed when he was 11 years of age for 14 hours a day at extra hard work. Had Mr. Fraser seen that boy?

Mr. FRASER replied that he had not only seen him, but taken the whole evidence from his mouth. The points of his remark, however, was not that the work was extra hard, but the hours extra long. He admitted that that particular case might be an exceptional one, and that as an exceptional case it was not sufficient to establish a general principle.

Sir GEORGE JENKINSON: But it would be sent forth to the public by the press as a sample of the treatment which boys received at the hands of farmers. It was right, therefore, that somebody should stand up and rebut such charges, because they tended to do great injury (Hear, hear).

Mr. FRASER would ask a question in his turn. Was he to understand that it was perfectly exceptional to find a boy leaving home at five in the morning and not returning again until seven? Because he could state as the result of his inquiries that he found it to be constantly the case.

Mr. PELL should say it was not an exceptional case. He was a large employer of labour, and had many boys who left their homes at five in the morning and did not return until seven in the evening.

Sir G. JENKINSON: If Mr. Pell was in the habit of employing boys in that way, he should like to know what their ages were? but he (Sir George) had only to deal with Mr. Fraser's statements, and knowing what was the practice in his neighbourhood, he hesitated not to say he believed the case of the boy referred to by that gentleman was a solitary one. At any rate, it did not appear that the labour which the boy had been doing from the age of 11 to 14 had disagreed with him, or done him any injury. With regard to pauperism, he did not think it existed so extensively in the agricultural districts as in the towns; and this opened up an important matter which required attention in connection with the education question, quite as much as that question itself did: he meant that the labouring classes should be taught that the object of educating them was to enable them to earn an honest livelihood. He held, therefore, that the Legislature ought to interfere for the protection of working-men from the tyranny of trade unions and those who promoted strikes by means of combinations. To trades unions he did not object so long as they were kept in their proper places ("Question").

The CHAIRMAN called the hon. baronet "to order."

Sir GEORGE JENKINSON: The effect of such combinations was the promotion of pauperism, as was shown by recent events at the east-end of London (Hear, hear). The hon. baronet then proceeded to contend that the land ought not to be charged exclusively for the education of the labouring classes; but that the fund-holder ought to bear his share of the burden; that, therefore, provision for the maintenance of schools should come out of the Consolidated Fund. As to the question of wages, Mr. Fraser had stated that the average in Gloucestershire was 9s. a-week.

Mr. FRASER had said nothing about average wages. What he said was that he knew places in Gloucestershire where the wages were 9s. a-week, and since he had been in this room he was informed that there were districts in England where wages were only 8s. a-week.

Sir GEORGE JENKINSON: That had been asserted on more than one occasion; but an investigation would go to show one of two things: either that the man who received such wages was incompetent, or else was paid in kind, either by a cottage, or a supply of potatoes or flour, or in some other way in which money-wages were supplemented, so that he received a large equivalent. At any rate he (Sir George Jenkinson) knew of no such wages in Gloucestershire as had been mentioned by Mr. Fraser. There was no good ploughman, that he was aware of, who did not average from 15s. to 14s. and 15s. a-week, including money and other things. Whatever resolution then was passed that day, he hoped it would take this direction—that it would deprecate a compulsory rate, that it would advocate first the trying of a voluntary action, and that any grant in aid should be made from the Consolidated Fund. As to the age below which labour should not be exacted from children, he had no objection to the limit of ten years.

Mr. HODSELL (Maidstone) seconded the amendment of Mr. Duckham, and spoke briefly against the adoption of any system of compulsory education as repugnant to the feelings alike of the rate-payers and the labouring classes. He also denounced an education rate, and argued in favour of the view enunciated by Sir G. Jenkinson on that point.

Mr. BRANDRAM (Hertfordshire) did not believe that the merely nominal attendance of the agricultural children at school referred to by Mr. Fraser was the result of their labour being absorbed by the farmer.

Mr. FRASER: Not wholly, but partially.

Mr. BRANDRAM said he lived in a hamlet where there were a good many poor people, and which was excellently provided with schools. Yet he knew there were families amongst them who kept their children away from school without any excuse whatever. Instead of going to school, the children were all day long on the village-green, where they were an intolerable nuisance. He granted that they would be of little use to the farmer under ten years of age; but nothing short of compulsion would make them attend school, and such a measure as that he was not prepared to support. The wages of the labourer in his neighbourhood were now about 13s. a week in the great majority of instances. Carters were paid 14s. This was supplemented heavily in kind at the hay and corn harvests. And, taking the year round, he did not believe the agricultural labourer was one whit worse off than the mechanic in the same district. Payment in kind he would do away with altogether, and for it substitute a single money payment; for there was nothing like a man knowing what were his real earnings. He could not concede that farmers as a rule were responsible for the distances which the boys in their employment might have to travel. His boys lived close to his yards; but it was no business of his if they lived further off, and if they had to walk two or three miles every day to their work, that was rather the fault of the landlord in not providing suitable cottage accommodation (Hear, hear).

Lieutenant-Colonel BRISK observed that the opinion of the Essex Chamber, which he represented, was very similar to that of the Gloucestershire Chamber already mentioned. He understood Mr. Pell to be opposed to compulsory education. (Hear, hear, from Mr. Pell.) What, then, was the use of declaring by resolution that it was inexpedient that a child should be employed in agriculture while under nine years of age? Was the child to remain idle, or be kept from school up to that age? ["Mr. Pell: "No, no.""] He took it for granted that the adoption of such a resolution as Mr. Pell's would have some effect upon legislation. Personally, he agreed with those who thought that it was inexpedient that children should be employed in agriculture under ten; but the objection to prohibition was that 1s. 6d. or 2s. a-week earned by a boy in many cases made all the difference between happiness and misery in a labourer's cottage (Hear, hear). It would be a great satisfaction to their minds if all boys up to the age of eight had the benefit of the education and discipline of school; and he thought that should be supplemented by attendance at evening schools in after-years, and that certificates should be required of attendance for the number of hours suggested by Mr. Fraser during the winter months. The great difficulty in the agricultural districts was to get children to attend school at all. As regarded the employment of young boys in agriculture, he thought Mr. Fraser had rather overdrawn the picture. It was no doubt true that boys were employed at a very early age in sowing rooks and crows and other occupations of a light nature; but if the matter were looked into, it would no doubt be found that the little boys described as ill-fed and ill-clad, and as watching for so many hours in bad weather, were often to be seen sheltered comfortably under a hedge during rainy weather, or eating their bread-and-cheese in some snug and secure position. In conclusion, the gallant colonel deprecated the disturbance of the present system by amalgamating it with a system of rating, and referred to the progress of education during the last thirty years as showing that voluntary action worked satisfactorily.

Mr. WHITAKER (Worcestershire Chamber) said there could be no doubt that the farmers throughout the kingdom desired the improvement of the education of the labouring classes, the only question being whether a compulsory system should be adopted.

The CHAIRMAN observed that compulsion was not the question before the meeting.

Mr. WHITAKER said Mr. Pell's resolution involved the principle of Government interference up to a certain age with the control of the child; and he protested against parents being compelled to send their children to school by act of Parliament.

Mr. G. CORNWALL LEIGH remarked that if the discussion

were not strictly confined to the resolution it might last for a week. He had come there not to take any part in the debate, but to learn what were the opinions of the farmers of England.

The CHAIRMAN said the only question before the meeting was whether labourers' children should be employed in agricultural pursuits below the age of nine or of ten.

Mr. PELL hoped it would not be inferred from his proposing his resolution that he was in favour of enforced illness up to the age of nine; how the nine years were to be occupied was a matter for after-consideration (Hear, hear).

Capt. HORSELL, of the Swindon Chamber, said that Chamber had adopted a resolution similar to the amendment of Mr. Duckham. That view was very strongly expressed by many of the members. It was strengthened by the statement of Mr. John Williams, of Baydon, Hungerford, that he left school at 12; it being felt that if prior to 1820 Mr. Williams, who was an eminent mechanician as well as agriculturist, could obtain sufficient education by the age of 12, boys in these days of improved masters could surely get enough to fit them for their calling. In the picture he drew of the protracted labours of boys Mr. Fraser forgot to take into account the intervening time used for recreation.

Mr. NEILD supposed that if either nine or ten years were adopted as the period for labour to commence, it would be assumed that no Government supervision would be necessary after.

Mr. H. J. LITTLE (Northamptonshire Chamber) had no doubt that the farmer could dispense with the labour of boys up to the age of ten, but it was quite another question whether the labourer could spare the earnings of his children.

Mr. SWANN, of the Leicestershire Chamber, said that body had fixed the period at nine instead of later, on the ground that manufacturers might have the benefit of children's services at an age at which farmers would be deprived of it. Mr. Fraser's observations with regard to low wages fell perfectly harmless as regarded his own district. If he employed a man at 9s. a week, he could not expect his services to be of much use (Hear, hear).

Mr. LONG, of the Gloucestershire Chamber, denied that the rate of wages in that county was only 9s. a week for agricultural labourers, and wanted to know whether Mr. Fraser had not had to apologise at a public meeting which was recently held, for making such a statement.

After some observations from Mr. SMYTHIN and Mr. WEBB, the former of whom thought there were seasons of the year when the labour of children under nine years of age might be usefully employed for the advantage of both their parents and the farmer, whilst the latter expressed himself in favour of limiting to ten years the age below which they should not be employed, but pointed out as a practical difficulty that agricultural children of the male sex when well educated were apt to seek employment in other directions,

The Earl of LICHFIELD addressed the Chamber, and said that he found himself in the position of being called upon to vote for a resolution which declared that children should not be employed in agricultural labour until they were nine years old, or for an amendment that they should not be so employed until they were ten years old. He candidly confessed that he was unable to make up his mind to vote for either of these propositions, unless he was made distinctly to understand at what age all restrictions whatever upon the employment of children were to cease. If he were told that they were to cease at the age of either nine or ten, then he would say that he should attach very little value indeed to the education that was given before that age. It appeared to him then that some of the speeches to which he had listened went against all education for the children of agricultural labourers; and that was practically the case with the last two. He considered, however, that a great fallacy lay at the root of the statement made by Mr. Webb. The objection raised was that if children got something above the ordinary amount of education they were immediately unfitted for agricultural labour. Why was that? He maintained that it was simply because it was an exception to the rule that such children obtained an education that fitted them for anything else. The demand for a rather better education than was received by the ordinary class of children turned out of our national schools had of late years been too great for the supply, and the consequence was that wherever a child was

somewhat above the common level of intelligence or was better educated than his fellows he would probably be taken away from the parish in which he had been bred and educated, and thus he lost as an agricultural labourer. He maintained, therefore, that there would be a totally different state of things, and one the value of which it was almost impossible to estimate, if an adequate education were given generally to all children employed in any labour whatever. The question before the Chamber was really whether there should be legislative interference and restrictions in any shape with the children of the agricultural labourer, rather than what should be the exact age at which restrictions should cease. Once agreed that legislative restrictions were desirable or necessary, the next point to be considered was up to what age these ought to be continued. For himself he could scarcely believe that it was now a question whether legislative interference with the children of the agricultural labourer should or should not be adopted; because the principle had been applied to every other, or nearly every other, description of labour in the country. One speaker, who made some rather pertinent remarks on the subject, so far as they went, had put one side of the question and forgotten the other. He observed that if no child were allowed to be employed in agricultural labour under the age of ten, the manufacturers in the towns would have the advantage of his labour between the age at which he might be employed by the manufacturer and the age of ten, when he might be employed in agriculture. Now, supposing the age were restricted to 10, as proposed by the amendment, and beyond that there was no further legislative interference, how was the case to be put then as between the agriculturist and the manufacturers, for the period between the age of 8 and 18; because up to the age of 13 legislative restrictions were applied to almost all other descriptions of labour than agriculture. He merely wished to point out his difficulty as to both resolution and amendment. He could vote for neither, and could not make up his mind on the subject, until he knew whether this was all the agricultural community were prepared to support in the way of legislative interference with the children or their labourers.

Mr. PELL explained that if the original motion were agreed to, he had another resolution to propose with regard to the employment of children's labour after the 9th year of their age.

The question was then put, and, on a show of hands, Mr. Daekham's amendment in favour of ten years of age was negatived by 17 to 9; and the original motion for nine years of age was carried by 19 to 14.

Mr. DARKE (Newbury) moved that the Chamber deprecated any measure which countenanced an education rate; and the proposal was seconded by Mr. CHANDLER.

To this, Mr. WHITTAKER proposed, as an amendment, that, in the opinion of the Chamber, the voluntary system had effected great good, and if supported by a Government grant on a more liberal scale, it would be sufficient, and that compulsory education should be opposed.

Mr. Smythin, having seconded this amendment, it was put to the meeting, and lost by a large majority. Mr. Darke's motion was then declared carried.

Sir G. JENKINSON moved, and Mr. LONG (Gloucestershire) seconded, the following resolution:

"That this Central Chamber of Agriculture deprecates any compulsory legislation on the subject of the employment of women and children in agricultural labour, preferring voluntary action, which is likely to follow the discussion of this subject, and believing that any compulsory legislation would defeat the object desired, because it would be an undue interference between parent and child, and also because if it involves the penalties of fine and imprisonment on parents who decline to send a child to school, it would be practically impossible to carry out such legislation. That as to the question of the means to be provided for the education of children, it is the opinion of this Chamber that, as such education is highly desirable, Government aid should be granted to existing schools, more liberal in amount, and less restricted as to conditions, than under the present system. That such aid should be given from the Consolidated Fund, and should not be raised by an additional local rate."

The CHAIRMAN: If you touch on the question of the Consolidated Fund, the Chamber ought to be prepared to say if it be willing to submit to a penny income-tax (Hear, hear).

Sir GEORGE JENKINSON: That is a matter for the Government to decide upon.

The CHAIRMAN: Are we who are members of the House of Commons to tell the House that the farmers of England are prepared to submit to a penny income-tax? for that, in short, is the meaning of the "Consolidated Fund" (Hear, hear, and laughter).

Sir GEORGE JENKINSON: A penny income-tax would be far less likely to hurt the farmers than the wopenny rate which Mr. Fraser speaks of (Hear, hear).

The CHAIRMAN: But will the farmers be perfectly satisfied if we, in the House of Commons, say they desire that an additional penny of income-tax should be raised?

Sir GEORGE JENKINSON: Coupled with the qualification that they prefer it to the wopenny rate suggested by Mr. Fraser.

Mr. PELL moved, as an amendment to Sir G. Jenkinson's motion, that no children be employed in agriculture, unless it be shown that educational provisions, analogous to those which are embodied in the Factory Acts, have been satisfied during the first nine years of his life.

Mr. Brandram having seconded the amendment, a short discussion ensued as to the nature of the educational provisions in the Factory Acts, in the course of which Mr. Read, M.P., pointed out, as an objection to the proposal, that those Acts permitted a child to go to work from eight to thirteen years of age for a certain number of hours daily, provided it had received an education.

Mr. PELL accepted this objection as fatal to his resolution in its then form, and consented to strike out the words "provisions analogous to those in the Factory Acts," which he admitted, would not apply to the case of the agricultural child. Some further conversation followed, and ultimately Mr. Pell withdrew his amendment altogether.

Col. BRISE next moved as an amendment, and Mr. CARRINGTON SMITH seconded it: "That in the opinion of the Chamber the education for the agricultural population would be best carried out by the present voluntary system, provided the public grants were more liberally administered, and that in cases where the voluntary system had failed or was likely to fail it was the duty of the State to provide education for the people."

This amendment was also put and rejected by a decided majority, and the Chamber subsequently adopted the resolution of Sir George Jenkinson almost unanimously.

In announcing this result, the CHAIRMAN remarked: There we members of Parliament are to inform the House of Commons that the farmers of England are ready to pay an additional penny of income-tax for the purposes of education! (laughter, and cries of "No").

On the motion of Col. Brise, seconded by Sir G. Jenkinson, a cordial vote of thanks was passed to Mr. Fraser for having attended and expounded his views to the Chamber.

Mr. FRASER, in acknowledging the compliment, said he felt that the subject was one that was almost too wide to be taken in at one sitting of the Chamber. It branched out in so many complications and difficulties that no one mind at any one time seemed able to take it all in. But he should leave this meeting having registered in his note-book several valuable suggestions and opinions; and he hoped, when the time came for him to present his report to the Royal Commissioners, the farmers of England, who had received him everywhere with the greatest kindness and cordiality, would see that he had not misrepresented any fact that had come under his observation. He had always been ready to receive correction of any mis-statements that he might have inadvertently made; and at the bottom of his heart he had only one object in view, that of doing what little he could in his humble capacity to bring a sound elementary education within the reach of every labouring man's child (cheers).

The CHAIRMAN announced that Messrs. Pell, John Claydon, T. Daekham, Meire, Neild, Kendall, Robinson, and Emson had been nominated by the sub-committee to give evidence before the select committee of the House of Commons on the Foreign Cattle Market Bill.

Mr. READ, M.P., having stated that the select committee would meet in the succeeding week, moved the following resolution: "That this Council hail with satisfaction Lord Robert Montagu's amendments on the Metropolitan Foreign Cattle

Markets Bill, and strenuously urges that the regulations for cattle importation should be made general; that a period for the completion of the Metropolitan waterside market should be fixed by the Bill; and that a different day or days from the Islington market-days for holding the foreign cattle market should be specified in the Bill; and that a petition embodying the above views shall be signed by the Chairman for presentation to the House of Commons in the usual way."

Mr. T. HORLEY seconded the motion, which was agreed to *nem. con.*

Mr. DUCKHAM suggested that printed copies of the petition should be sent to the several local chambers.

The Chairman then vacated the chair, and on the motion of Mr. Wilson a vote of thanks was unanimously passed to the honourable gentleman for presiding, the sitting having lasted more than five hours and a half.

OUR POWER OF INCREASING THE SUPPLIES.

SIR—Having promised to read a paper before the Farmers' Club in November next, "On the Undeveloped Power of British Agriculture," I have been trying to "take stock" of our present agricultural position, and, as a part of it, our present meat production. This was by no means an easy task; for upon making inquiries of those whom I considered competent authorities, I found either an inability to satisfy my request, or the most discrepant computations; so at last I came to the conclusion that the only reliable test, and that a rather imperfect one, was to take the population and the cattle census together.

On the completion of my task I was much gratified by the perusal of an admirable paper on the same subject, read before the Society of Arts by Mr. Wentworth Lascelles Scott, on the 19th ult., which every one interested should peruse. Singularly enough, his estimate and my own as to net weight of cattle per head (400 lb.), were exactly similar, although we differed 6 lb. each in the matter of sheep; but I accept his weight (45 lb.) of the latter as probably the most correct, seeing that there would be so many young lambs at the time of the census. I agree with Mr. Scott in the melancholy conclusion, that the amount of British meat available for consumption is only 2 ounces per head per day for the whole population. I would add to that half an ounce per head per day of foreign imported fresh meat (dead and alive).

I am sorry to say that my estimate of meat consumed by our agricultural labouring population (of all ages and sexes) is only 1 oz. per head per day, or a mere fraction beyond that. Taking a man, his wife, and three children as an average, 35 oz. per week would be, in my opinion, a just calculation, and the meat would be almost entirely pork or mutton. To show how widely discrepant are opinions on this matter, I quote an extract from a letter I received from an eminent London butcher.

"I have given your letter some consideration, and I asked the opinion of one or two of our leading men at market. We think 8 oz. each, as near as can be, the amount of daily consumption for 30 millions. The allowance to the army is $\frac{1}{2}$ of a lb. of beef per man per day, and the navy rather more. Our prisons, also, are pretty well supplied in quantity, though inferior in quality; as also our workhouses, infirmaries, schools, and all large collections in our public institutions. I cannot conceive you can be much nearer the mark than 8 oz. each. We are great meat eaters, all who get it, in this country, and get it they do, one way or other."

This rather astonished me, being much more than cent. per at. upon my own estimate, so I calculated how much 8 oz. per day would amount to, at 6½d. per lb., and found it to be £148,250,200; and as I agree with Mr. Scott's estimate of our total available annual home supply is only 381,468,000 lb., it will amount, at 6½d. per lb., to only 4,708,425. Adding probably for foreign imports, live and dead, £10,000,000, we have a sum of £44,708,425, or 100 millions sterling short of my butcher friend's calculation. When we consider how large is the consumption of meat in towns and cities by the Upper Ten Thousand and by well-to-do classes, millions must fall short of the average 2½ oz. daily—even making due allowance for infants, that we hardly deserve, nationally, the title of "John Bull."

There is no difficulty in pointing out how our meat supply might be largely increased, with profit to the farmer and advantage to the public. I will quote the case of this farm

as an illustration; many others could be found in various counties of the kingdom, but this farm being much below the average natural quality of the soil of the kingdom, affords a safe illustration.

The quantity of meat made annually on this farm is 300 lb. per acre, landlord's measure, over the whole farm; at 6½d. per lb. gives £5 8s. 4d. per acre. At this rate the census return of 1867, giving 45,491,097 acres in crop, fallow, and grass, would give a return in meat of £246,410,107, as against our present £34,708,425.

But this farm also produces in corn, within the same area, this year, £7 per acre, landlord's measure, which would give, on the

45,491,097 acres, in money value	£318,437,879
The average annual value of all our corn crops, 1862 to 1866 inclusive (5 years) was	85,369,477

Margin for improvement in corn	£233,068,202
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This shows what can be done, and done profitably, too; but there is no fear of our arriving hastily at such overwhelming results, however desirable they may be for the happiness and welfare of the people.

Before we can even approach to such a desideratum a whole host of prejudices must be removed, and old customs changed. This must be left to the efflux of time, the force of public opinion, and the too obvious necessity for providing food and employment for our ever increasing millions. At all events, the vast margin for improvement, shown by the facts in this letter, must awaken us as to our agricultural shortcomings. There is no lack of capital in this country, for it flows over into many others. Let agriculture put itself into a position to tempt it into a remunerative stream.

1867: United Kingdom census—taken after lambing:

Cows and heifers in calf	3,557,819
Other cattle	5,137,600
	8,695,419
Sheep	33,745,116
Pigs	4,200,873

Mr. Scott's estimated weight of meat:

Cattle	400 lb.	} each.
Sheep and lambs	45 "	
Swine	60 "	

His estimate is that the annual number slaughtered cannot exceed 23 per cent. of the existing live stock.

The total margin for improvement is thus:

In meat	£211,703,683
In corn	233,068,202
	£444,771,884

At page 323 of my book (1860) I estimated our margin for improvement at £421,000,000.

As our total area in the United Kingdom is 77,518,585 acres
And the census of 1867 only takes account of 45,491,097 "

we have, in addition to my calculation, ... 32,022,428 "

—a considerable space for improvement.

March, 1868.

Yours truly,

J. J. MECHI.

THE NEW FARM.

Now, if I were Lord of Dunrobin Castle, and for reasons sufficiently obvious to you all I dare say I should particularly like to be Lord of Dunrobin Castle, I should prefer of the article bovine most decidedly to cultivate the shaggy West Highlander, with its long lithe cubic frame, sharp-pointed horns, and uniform type. To see a lot of such brown, black, dun upon the fern-clad park slopes by the wild tumbling cataract, and amidst the heather-brake (the whole my own property too), would afford me, I must confess, unmitigated pleasure, and would lead me often in admiring contemplation to their vicinity, only provided the lord regnant of the herd should not too curiously reciprocate the attention: as the having to "tree it" for an indefinite period, especially towards the luncheon hour, might not be equally delightful. But as I am not, nor likely to be, the master of Dunrobin Castle, I must cast about and see what sort of cattle will best suit my taste and pocket as an ordinary agriculturist upon a small scale. Well, then, will the juicy Devon do? Aye, right well, my lad, in the shape of cold roast sirloin with pickled onions and mashed "pratees." It is a lovely little breed upon its own cloverly pastures. Again: the mossy-coated Hereford cows. It is a pity that the best breeders of this stock don't try more to keep clear of the hard-skinned smooth ones. A rare herd might be got together in this county of Herefordshire, by picking here one and there one—often, too, out of a small lot almost by the way-side. Both Hereford and Devon do best, I think, upon their own soil, better perhaps than any other sorts there. There is a virtue doubtless in their being natives of the district, just as the Suffolk horse does better on the bean-producing clay-fields of the eastern counties than in a damp turnip district. But why drift on in this way to the expected declaration that for all purposes one deems the cosmopolitan Shorthorn the best cattle to keep? Why, simply to ask whether some one cannot put an American pump into the auctioneer's head, and draw forth a stream of the information we breeders desire? We desire it sadly.

The blessed spring is at hand again. One sees it in every glance of sunlight, and feels it in every breeze. There's Master Tom-Tit, the long-tailed, flirting with his cousin Miss Blue-Tit, whom he has taken in to dinner upon a willow spray, as he hops about, and busies himself to pick out for her delicacies from underneath the bark; while on the lower branches there's quite a juvenile party of the small tit's fry. Two young squirrels from their nest, which hangs like a ball in a neighbouring birch-tree, have been gambolling around the trunk, bobbing this way and that way, and cutting over the tall box bushes, as if it were a racecourse, no more ruffling it than would a breath of summer air. Then our industrious, lovely nut-hatch has returned too. She has gathered, and we trust enjoyed, all the filberts we had pinned around the hole in which she annually builds her nest. There's a rabbit too—the gardener says, "Confound him!"—flicking his white tuft contemptuously in view, as he deems it best to bolt under the bough of the laurel fence at our approach. Master Reynard we don't scent about; although during the snow he made a frequent circuit of the very house, and actually had the audacity to kill a hen-pheasant close underneath the windows. A woodpigeon, reared from the nest last year, that got loose from the aviary when the fat gardener went in to fetch a board one day, and was not

smart to close the door, hangs very melancholy about the woods. She hopped so leisurely beside me the other morning, that, not knowing of her escape, I concluded she must be a wounded bird, and tried fruitlessly to catch her. Since that, while a pigeon-shooting match was going on in the meadows below us, upon the other side of the river, she flew up from somewhere below, and nestled as if for protection behind an oak bough, close above the children's heads, where they were standing to look on. I hope she'll find a mate, and build near the house. During the frost and snow a pair of water-hens came up, and fed regularly with the pheasant upon the lawn. With the return of softer weather, they have discontinued their visits.

I am sorry to see that Mr. Frank Backland has pronounced decidedly against the introduction of horse-flesh upon the table. Certainly if the taste, as he states, at all resembles the smell of steaming hunters at a check, it must be inconceivably abominable as a viand. Surely, too, there would be great risk of a glandered specimen being sometimes served up, the incipient symptoms of this disease it being impossible to detect. It certainly would have led to a considerably larger number of horses being bred, if a filly whose forelegs were too fine could have been simply sent to the shambles as first-class beef. It would have much diminished the great risks of breeding which deter all but the most enthusiastic lovers of horseteak now from keeping a brood mare.

This reminds me of a piece of luck which befell me the other day, not before I wanted it, considering some equine losses that I experienced two years since. I attended quite casually the sale of a small mountain farmer, who had notice to quit, and picked up a rare specimen of a sort that I have been long looking for—a short-legged, square-acted, spirited, Welsh cart-mare, about fifteen hands in height, or just under it, with quarters that one might play ball against, and a back that would carry a cradle steadily, with a sweet head, a tan muzzle, and short cannon bone, heavy in foal, too: a most temperate worker, and so fast that, being matched with a colt, while I was looking on, she walked right up with her nose into the neck of the driver of a Suffolk team before her, so that the lad had to ease them, and wait for room; all this, too, gentle reader, for the sum of £11 12s. 6d.! Congratulate me, and hope of her as was once aptly said of Lord John Russell, in Eastern language, that her shadow may never grow less. I trust that, although aged ten years, with luck she may prove the ancestress of some valuable teams. Her late owner has gained considerable celebrity as a winner of silver cups at local ploughing-matches, this mare being one that he generally used. A colt of hers went for £37! It was a bit of rare luck. The spectators were not thinking until it was too late to bid.

There have been considerable losses hereabouts among the lambs of last year upon the turnips. In the worst cases the disaster has been clearly attributable to their having been starved during the autumn, so that their system could not stand the change to forcing food. In one case the lad was giving the pen too wide a range. One or two had fallen several nights in succession. Orders were issued that they should only have turnips between ten and four, but plenty of hay by night. This stopped the plague at once.

I have had a recipe sent to me for the making of shoe wine, which is said to be an excellent specific for the

* We say ditto to gardener.—EDITOR, M.L.E.

lemon, being of course strongly astringent. Carbonate of soda and ginger mixed strong, the dose being about a wine-glass at a time, I have never found to fail. That acidity in the stomach, which is the cause of its excessive looseness, is thereby corrected.

By the way, being in the humour to communicate receipts, you will doubtless have tried the old plan of getting grease out of cloth by laying brown, blotting, or other absorbent paper upon the spot, and pressing it with a hot iron. A far better plan, as was shown to me the other day, is to hold a piece of red-hot coal with the tongs close above the stain; you will see the grease apparently issue out in steam. I have always found that the ironing of paper left a something still inherent in the cloth, which was attractive of dust, and *showed* very shortly. Under this latter process, the obnoxious element vanishes like a well-rattled fox. *Esperito crede.*

Curious is it how practice sharpens natural ability. One has heard of a man having an eye for a horse; but to-day it occurred to me to find a man with an eye for a needle. One of the servants having a bad whitlow, I had pricked it for him, and threw the instrument out of sight as I imagined between a drinking trough and the wall. The next day having to repeat the operation, I

remembered where I threw the needle, and looked for it, but in vain. The coachman seeing me stoop, said "Oh! I have the needle, sir." I could not have thought that anyone would have noticed it thrown there; but I found a solution. The man had been a tailor, and took to driving, as his health suffered from too close confinement to the house.

More assured am I than ever of the value of rowen for lambing ewes. It is delightful to stand by the tame grey-eyed Down mother, and watch her so daintily make her dinner, cropping first an advanced green blade, now a faded stem, now leaf of sorrel or crow-foot, then a nip of flat-green succulent (I don't know what leaf), mixing them quite as cook does the salad. And the lambs thrive so well with it. Such a flush of milk the mothers seem to have, and there's no diarrhoea. It well rewards for saving in the autumn. What a talent Jonas Webb must have had for finding the needle! I am every day more surprised to contemplate the meaty legs of his mutton, and compare them as milkers with my Cotswold flock.

I wonder he never took to pigs. But I had best betake myself to bed, you will suggest; so, gentle reader, I wish you with Byron's grasshopper one "good-right" chirrup more. Exit
VIGIL.

THE USE OF LIME IN AGRICULTURE.

CARMARTHENSHIRE FARMERS' CLUB.

At the usual quarterly meeting of the Carmarthenshire Farmers' Club, Mr. J. BUCKLEY, of Llanelly, said: The diversity of opinion that exists as to the application of lime to the land, with the view to the increase of its productive powers, and the frequent and sometimes serious mistakes made, lead naturally to the conclusion that the subject is but imperfectly understood. At one time we hear of the wonderful results that have followed a dressing of lime, and at another that no benefit at all was derived, and that it was just so much money thrown away. At our last agricultural dinner we heard a statement to the effect that a certain district of this county was impoverished and brought into a very unproductive state by the constant use of lime. Of the correctness of all these statements I have no doubt, being the result of experience. My present design is an attempt to account, at least in some measure, for this diversity of results; and to elicit from gentlemen present (some of whom are practical men of long experience) information connected with the application of lime to different soils—and under varied circumstances—information that we may be able to take home and turn to some account on our farms. To this end I propose, first, to make some inquiries as to where lime may be advantageously or profitably used; and in the second place, as to where its application would be disadvantageous or attended with loss. I am going to dwell mainly on my own practice and observation, with its results, and I feel sure that you will expect no apology from me for so doing, for it is that kind of information which is expected and looked for at this club and societies of this kind, and not essays compiled from agricultural works that we have in our libraries, and can peruse at home. What we most value here is information derived from and applicable to our own soils, climate, and circumstances. All the arable land on my farm near Penyfal I have for many years cultivated on the usual four-course system of rotation; and it has received a dressing of lime every fourth year of about four tons or loads to the acre, applied as a dressing for the wheat, which I call the fourth or last crop of the course. It is to the part that this dressing of lime takes in the course that I beg to draw your special attention. The first crop of the course being roots is manured with about 15 to 20 loads of farm-yard dung and 4 cwt. of dissolved bones per acre; the second crop of this course is barley, and the third clover with Italian grass, neither receiving any manure; then in the autumn the dressing of lime is spread on the clover-ley and

immediately ploughed in as a preparation for wheat, which is the fourth crop of the course. Now, what sort of crops do I get from this management? The roots (mangolds and swedes) have been almost invariably a heavy crop, and you will please mark that they are always carted off the land. The barley (Chevalier) I believe I may truly say has averaged over 40 bushels per acre. The clover I often cut twice, and the hay of the two cuttings has been valued in the ricks at 3½ tons per acre. The wheat, I think I may say, has averaged not much short of 40 bushels per acre. I must state that the wheat gets a very slight dressing of dung called a half or quarter dressing, spread on the surface, and worked in before sowing, with Colman's cultivator. This slight dressing of dung has sometimes been applied to the clover between the first and second cutting, and has doubtless increased the crop, although given in reference to the following wheat. If I have had no dung to spare I have assisted the young wheat when a few inches high with a sprinkling of artificial manure, such as guano or malt dust. Had I fed off the clover with sheep I should not have given the wheat any kind of manure, but I keep no sheep on this farm. I do on another under a five-course rotation, the clover-ley being grazed the second year. This rotation and management I have followed with but little deviation for a long series of years, and the land has not only maintained its fertility, but improved in strength and heart. I mention this because there is a generally prevailing idea that our light lands will not bear to be kept in this way regularly under the plough—that they are too weak. My soil is light and rather shallow, yet of sufficient strength and generosity to repay with good interest what is expended on it. Now I have made this particular statement that I may institute the inquiry—what office has the lime performed in this course? Although the land was well manured and deeply worked and cleaned for the root crop, the removal of the roots and following crops of barley and clover have been a considerable draught on it; and, though by no means exhausted, it requires this small dressing of lime to stimulate it, and dissolve the more inert organic matter and manure as food for the growing wheat; it does more, it enters into the structure and composition of the straw and grain itself. The reason that the land is never run out is, that the exhausting process is never carried further than that stated. After harvesting the wheat the course begins again, and the soil is renovated and replenished by the manuring and cleaning process of the root crop; but if

instead of this I were to take a second, not to say third, corn crop, I should then have fairly entered upon the impoverishing system, and in following it, be obliged to lay the land down full of weeds, and in an unprofitable state, to rest for years, waiting the slow process of nature to give it a thin sward of fertility, that I might again exhaust it in the same way. Under a regular rotation of crops, whether a four, five, or six years' course, I am fully persuaded that the small and frequent application of lime is preferable and more effective than heavy doses at longer intervals, as in the former case the organic matter in the soil is more gradually dissolved and supplied as food to the plant, whereas a heavy liming would be likely to dissolve and dissipate it too quickly to feed all the following crops for a more lengthened period. A few words as to the application of lime to meadow and pasture. There cannot be two opinions that it is of very great advantage when the land is in a fit state to receive it. As to the mode of application, it may be spread on the surface of the grass in a slack state; or, what is far better, made into a compost by being mixed in due proportion with earth, such as the cleaning out of ditches or ponds, old banks of hedges, or accumulations in the headlands. The more vegetable matter it contains the better. The shells of burnt lime are first mixed all through with the earth in due proportion, say on the headland, and there allowed to remain until the time for turning over, which is precisely when the lime has slacked into a dry hot powder, as the whole will then mix and incorporate into a warm mass; but it never should be allowed to burn. It should not be removed at the earliest until cold. A dressing with this compost will not only much increase the quantity of grass, but what is more, so sweeten it by promoting the growth of the finer clovers and grasses, that when grazed by stock it will be eaten down to the ground, and will tell a profitable tale in the condition of the animals, in the dairy, or when made into hay, by its fragrance as well as quantity. Not only quick lime, but mild and old, and indeed, calcareous matter in any form, will effect a great change for the better on grass land. I tried an experiment of this kind ten years ago with marked success on some low-lying meadows of about ten acres. They were so wet that they could scarcely be passed over in the winter, and were composed, for the most part, of a hungry clay to within two or three inches of the surface, and bore the sourest, coarsest grasses and rushes. Having effectually drained the land I was in doubt whether it would be best to plough before laying down to permanent pasture, or to endeavour to renovate the grasses without breaking the surface. I decided on the latter, for I feared to bring up the tenacious clay, and bury the thin sward. An extensive old building, about half a mile distant, was at the time being pulled down, and I bought the old mortar and lime rubbish at a small price, and set several women to pick and screen it, and carted some three to four hundred loads to the meadows, as a top dressing. At the same time I gave a thin sprinkling of perennial grass seed to assist nature in forming a new clothing. The scene was soon changed, the meadows put on a smiling face, being covered for the most part with the sweetest herbage of grasses and clovers. Thus, land not worth I believe 10s. an acre, though very near the town, would now let at high rent. This lime rubbish in large quantity proved just about the thing that these meadows required, to open and ameliorate the heavy clay, correct acidity, and decompose the inert vegetable matter in the soil, thus exerting both a mechanical and chemical action. That this lime rubbish of fifty years old still retained considerable causticity was proved by its effect on the fingers of the women, who were soon obliged to put on gloves to continue their work. Again; nowhere, perhaps, is lime, particularly quick lime, more useful than in breaking up rough turf, or reclaiming overgrown waste land. The lime should be spread hot upon the surface, and at once ploughed in, and the land subjected to the winter frosts; and if very foul with the roots of such trash as fern, furze, or briars, it should be continued a summer fallow, otherwise these enemies cannot be killed, and got rid of, but will be for ever springing up and troubling you, and be as thorns in your sides, as Hittites, Amorites, and Perizzites were to the Israelites, because they were not extirpated out of the land. I am at present doing this kind of work, and on some considerable breadth of land, so overgrown with furze that the roots have all to be grubbed out by manual labour before the plough can make its way. But although expensive work, it is far better than paring and burning, unless you wish to kill the goose for the golden egg, and

ruin the land (except the soil is very deep) for a generation. Lime is also invaluable in reclaiming bog and peat land after draining. I hope some gentleman who has had experience in this work will give us the benefit of it. There are few counties that have so great a variety of soils as this. There are the soils on the coal formation, the mill-stone grit, the mountain limestone, the old red sand-stone, and the Silurian in its various forms. The soils within the coal basin contain, I believe, little or no calcareous elements, and the waters of the brooks scarcely a trace of lime; but there is, unfortunately for vegetation, abundance of iron in both. An application of lime to the land therefore, when in a fit state to receive it, is most salutary on this formation, and has its full influence. The water, however, supplied to Llanelly, when sent for analysis, was stated to be wholesome for domestic use. The stratum next outside the coal basin is the mill-stone grit, happily a narrow one, as its surface is a most sterile soil, producing a coarse hard vegetation. Lime, with good farming, may correct it in some measure, but it is to be feared that it is hardly worthy of either. The mountain lime-stone, which encircles it, produces herbage of just the opposite character, fine and sweet, although very short; sheep thrive well upon it. Being full of calcareous matter it does not surely require lime; yet, possibly, the soil under certain conditions may get into such a state that a dressing of quick lime would be likely to give it activity. The old red sandstone, which bounds the lime-stone ridge, passes through Pembrokehire and this county in a strip of from one to six or seven miles broad, but so widens out to the east as to take half of Breconshire, and the whole of Herefordshire—the land of hops and orchards. The red soil appears congenial to the growth of these; and why should they not be cultivated in the red soil of this district, at least orchards, to a greater extent. It is, however, a soil peculiarly adapted to rotation cropping, say the usual four or five course. But, alas! fields of roots are few and far between. Light periodical applications of lime to this soil will be attended with great advantage. All the rest of this county, and, indeed, of the Principality, with very small exceptions, is on the Silurian formation, the soil of which varies considerably. A large proportion being mountainous, thin, and inferior, some low, heavy, and clayey, but not a little very superior land found in the valleys, and skirting the rivers, and also on the rising and undulating ground. It is difficult to account for the excellence and fertility of the soil in some districts in close proximity to others very inferior, except on the ground that the former contains calcareous matter in the form of impure lime, which is known to exist in some parts of this formation. The application of lime must, therefore, be regulated by the circumstances of the case. On the arable land under a regular course of cultivation, say in light periodical dressings, and on the stronger soils, clays, and meadow lands, in heavier doses, at longer intervals. It now remains for me to mention some cases in which the application of lime is disadvantageous and unprofitable. I have already intimated that it is worse than useless to apply it to land that has been already exhausted by it in growing successive crops of corn, and in which little organic matter of any kind remains for the lime to act upon. And this is very commonly the case on lands contiguous to the kilns, or where the land is very accessible and cheap. Everything that would feed the plant is scoured out of the soil, which becomes like a man of spare habits, who is ever dosing himself with Holloway's or other pills, until he has neither fat nor stamina left in his constitution. The success that followed one application of lime has, no doubt, often led to another application, but disappointment has resulted, and when no more corn could be got out of the land, it has been laid down to rest, and become unprofitable for years, until it acquired a thin sward of vegetation, to be again, with a dose of lime, and all the little manure of the farm-yard, subjected to the same process, that is, to produce wheat, oats, and barley in succession, and again laid down hungry and foul with weeds. You will mark that the consequence of this system is to keep the farm down to the lowest state of production—hungry and exhausted. Whereas, on the other hand, a well-regulated system of alternate cropping, whether a four, five, or six-course rotation, always maintains the farm in good heart and fertility. Under the former impoverishing system, a tenant in giving up his farm has certainly the advantage of sustaining no loss, but, by the usage of some parts of England, he would have a good deal to pay. While under the latter system he would probably have something considerable to receive for what he left in the tillages and unexhausted in-

pretensions. Our light arable lands can never be kept in a productive and remunerative state until cultivated under an alternate rotation of root, corn, and green crops, which means in other words no less than breeding, keeping, feeding and fattening more stock, making much more and richer manure, and producing far larger and superior crops of corn. These things all go together, one depending on the other. Of course this improved state of things requires more capital brought to the land, and it ought to be brought there. It will pay better than Overend, Gurney, and many other late adventures. If it does not attract by large profits, it holds out no false lights if judiciously entered upon. I need scarcely say that to apply lime to land that is wet, whether light or heavy, peat or bog, is just so much money thrown away, for it will remain inactive and lifeless; but drain thoroughly, and some of these soils being full of humus, an application of lime will be followed by a succession of green and golden harvests that will not only please but surprise. I will only further remark that where calcareous matter already exists in the soil, lime should be

applied at least with caution, as it may be worse than wasted. The experiment, on a small scale, can first be tried. In conclusion: There can be no question that the contiguity of the mountain limestone, and the coal with which to burn it, has been of great advantage to the agriculture of this district, and would have been much greater had the nature of lime in its application to the soil as an agent in cultivation been better understood. And now, with the extending lines of railway, inducing the erection of new kilns wherever they approach the limestone ridge, lime will be supplied abundantly, and at a cheap rate, even to those more distant parts where its cost has hitherto so disadvantageously limited its use. And if this great boon with which nature has favoured these south-west counties of the principality, conferring a power of improved cultivation and increased production, is only followed up by the employment of more capital and skill, they will doubtless rise to a much higher position in the scale of British agriculture. I believe, gentlemen, this to be the happy destiny of the land we now cultivate.

EAST-RIDING CHAMBER OF AGRICULTURE.

THE LABOURER'S EDUCATION AND EMPLOYMENT.

The monthly meeting was held last month at Beverley, Mr. W. Bainton in the chair. The Chairman introduced the Hon. Mr. PORTMAN, who read the terms of the commission with which he, amongst others, was charged. Five commissioners, he observed, were appointed to obtain information, as far as they could, from all classes in different parts of England, who were interested in agricultural employment, as to the number of children employed, the nature of the employment they were put to; and the state of their education. The object of the Government was to gain as much information as possible before any legislation upon the subject took place. The present commission arose out of a commission sent to inquire into the gang system. That commission found out that many children were employed in private gangs. A private gang was one where a number of children were employed under the supervision of a person employed on the farm. He had the pleasure of attending a meeting, a short time ago, of the North-Riding Chamber of Agriculture, where the matter was discussed. Since then a meeting had been held, at which they had come to the conclusion that the gang system did not exist in Yorkshire. He thought they must have misunderstood him; inasmuch as the gang system existed more or less in this county in the form of children being employed at killock pelling and stone picking. He believed that children were sent out to work at an early age, were kept away from school a great part of the year, and lost that education which they had obtained during the other portion. It was well known that if up to a certain age a child was not grounded in certain rules of education, whatever it had been taught before was of little use to it. He would ask them, therefore, as to the desirability of fixing a limit of age, below which any child should not be allowed to work. They would put aside the question of compulsory education, as a large subject for which something would have to be devised for securing a certain number of hours of schooling up to a certain age. There would naturally be a loss to the parents of the child in the small wage it might bring in; but it would be a question for the meeting to say how much of their labour was necessary in farm-work. If they limited the age under which they would take no child to work at ten, they could have three years' schooling, viz., from seven to ten; and in some parishes where there were infant schools they were taken in at even four or five years of age. He had spoken on the subject to schoolmasters, who had stated that if a child had a regular continuous education, and was well-grounded in the elementary rules, he might, if there was anything in him, have opportunities of improving himself after he had entered farm-service, by the facilities offered by night schools.

The CHAIRMAN observed that with regard to the age up to which children should go to school, he thought they might be sent as early as possible until they were nine years of age.

The farmers he did not think would require them before that time, and then they might be useful to the farmers and their parents also. After that it might, perhaps, be arranged for them to attend school—say from nine to twelve years of age one-half of their time; and when they had completed their twelfth year they might be set at liberty.

Mr. T. HARRISON (Leven Hall) observed that in his district the time in which children were employed was not one-fourth of what was wished to be made out. In spring for four or five weeks, and in harvest for three weeks, was the greatest time in which they were engaged. That, at least, was the custom in his neighbourhood, and he could never recollect it being more. As to employing girls, they never would have them when they could get boys. He believed there was only one time when they had girls at work, and that was on an occasion when they let the corn out to families who let their children assist in the harvest. The labour of children was much less than the Hon. Mr. Portman had represented, so far as regarded Holderness.

Mr. G. ANGAS (Beeford Grange) concurred with many of the remarks of the hon. commissioner, but was of opinion that the less they had of Government interference the better; since everything that savoured of compulsion was disliked by Englishmen. There was very little to complain of in Yorkshire; but that having got so bad in the South of England, the people there cried out for improvement, and called for Government interference.

Mr. D. BRADLEY (Etton) observed that the main cause of the children being employed rested with the parents more than with the farmers. The latter could do without them, but such a course would be found very hurtful both to the parents and the children.

Mr. E. RILEY (Kipling Cotes) said none of the farmers thereabouts employed children under nine years of age, and between that age and twelve more than half the year. He did not employ girls; and he found labourers more serviceable than boys, if the cottage accommodation was such that the former could be employed. He believed a good deal might be done with night schools, and instanced one in his own parish which had a nightly attendance of 20.

The CHAIRMAN produced a copy of the resolution passed a few days prior by the Central Chamber of Agriculture, which he proposed should be adopted.

Mr. RILEY proposed a slight amendment, as to the age at which children should be employed.

The MAYOR of BEVERLEY thought that it would not be wise to do anything hastily, and proposed as an amendment "That this Chamber recognizes the necessity of providing improved

education for the agricultural labourers, but defers passing any resolution on the subject till some definite scheme is before them."

Mr. WHITEING seconded the amendment.

The Hon. Mr. PORTMAN said there was not the slightest necessity for them to come to a hasty decision. He would rather that the matter was weighed over and carefully considered.

The CHAIRMAN said he would gladly withdraw his motion in favour of the amendment.

The DEPUTY-MAYOR was in favour of an adjournment of the meeting, and others being of the same opinion, the amendment was carried.

Mr. R. Fisher (Leconfield) was appointed to attend and give evidence before the Metropolitan Cattle Market Select Committee.

SEASONABLE NOTES.—SPRING.

Spring, with its reawakening and revivifying influences on vegetation, is now upon us, and Nature already begins to respond to its gentle breathings. Literally as well as figuratively the first breathings of spring have been gentle during the present season, the past month having been singularly mild and fresh; buds have swelled rapidly, and growth in general is very forward. In a practical sense, perhaps this is not altogether desirable, as there is some danger of such precocious buds being injured or altogether destroyed at a later period of the season, when they have expanded into flower and lost the shelter of their protecting sheath. Notwithstanding this, the return of spring is hailed with satisfaction and delight by most dwellers of both town and country, the danger of subsequent injury being altogether forgotten or overlooked in the enjoyment of glorious sunshine and balmy breezes, and in the pleasing contemplation of Nature's beauties as displayed even thus early in the beautiful lily, crocus, snowdrop, and other spring flowers.

The present season is a very forward one on the farm, the weather having been for the most part so open as to permit the agriculturist to proceed almost uninterruptedly with field labour. Man himself, if healthfully constituted in mind and body, feels the invigorating effects of returning spring, his spirits and energies becoming as it were endowed with new life, enabling him to enter with renewed elasticity and vigour into the duties and engagements of another year. Whatever may have been the trials and difficulties of the past, a healthy mind always begins a new year hopefully, recognizing therein another opportunity afforded for successful and consequently profitable effort. Thus, although the crop of 1867 in thrashing-out has not by any means realized the expectations that were raised in the minds of many men by its appearance and promise during the early period of its growth, few men of energy and experience in their business will be found changing their rotation or general mode of farming for 1868 on that account, but will trust more to increased attention to better modes of tillage and manuring, and buoyed up by hope look forward to having their efforts rewarded in Autumn by a more bountiful harvest than that of the preceding year. A man who changes his method of farming suddenly, merely because he has been unsuccessful for a season or has not realized certain anticipated results, has not much chance of doing well, as when a favourable change comes he is not in a position to benefit by it, his attention for the time being devoted to something quite different, and which, as likely as not, is correspondingly depressed.

It is a dangerous experiment for a tillage farmer to lay down a large portion of his land to grass, and equally dangerous, on the other hand, for the grazier to get suddenly into a large quantity of tillage, for no other reason than that of either party having sustained loss in the particular line in which he was engaged; the very want of practice in the branch to which his attention has been turned proving a heavy drawback, and in the end, in all probability, interfering to a serious extent with its successful prosecution. A notable and familiar example of this is to be found in the heavy losses experienced during the past two years in sheep-farming, in probably every county in England, Scotland, and Ireland. The value of sheep, from causes which need not be here entered into, having got so high as to be almost beyond precedent, numbers of farmers laid down large breadths of their land to grass, and stocked it with sheep, and many others made room for them on existing pastures by disposing of all or a portion of their cattle. Those who laid down arable land

to pasture did so, in numerous cases, with the view of lowering their labour-bill, and lessening their own personal attention and supervision, by having fewer people to look after, but yet expecting as good, if not a better, return from their farms than that which they had previously obtained.

Those who substituted sheep for cattle did so with more reason on their side, it having been done, in numerous grazing districts, to avoid loss by cattle-plague. The natural consequence of such an extensive and general stocking with sheep was their over-production. In Ireland alone (the amount being known correctly by the usual statistics taken annually in that country) the increase amounted to about half-a-million over the previous year. The effects of over-production were soon felt in a monetary point of view, the value of sheep having fallen to little more than half; and a loss was thus entailed upon the agriculturists of the kingdom, second only to that inflicted by rinderpest, and not felt quite so severely because more generally distributed. Could the amount of the losses sustained by the sheep-owners of the country during even the past twelve months be collected, it would form a most interesting and suggestive item in the year's statistic. It ought to be able, if anything could, to teach farmers the propriety of balancing the crop and stock of their farms, so that each shall bear a relative proportion to the other. We have always advocated a rotation suited to the capabilities of the land, and we consider the man who sticks to that rotation most closely will in the end be the most successful farmer and make most money. True, a man may at times make a lucky hit, but then, as we have previously shown, it is just as likely to turn out unlucky, and he is in a worse position than before. The farmer who adheres to his rotation knows what he is about; all the departments of his business are properly adjusted, and fit into each other with the regularity of a machine; he can calculate almost to a certainty the quantity of stock he will require to consume his green crops during the winter months, and to graze his pastures during the summer; he can with equal certainty calculate the amount of manure he will be able to collect, and the probable quantity of corn he will be able to grow and sell. Having something of everything, there is comparatively little danger of such a farmer suffering extensive loss in any one season, as it seldom happens that all the products of the farm are depressed in value at the same time, the ordinary rule being that if one article is low another is correspondingly high. The farm-standing of a farmer of this sort presents at every season of the year the appearance and creates a feeling of true comfort and happiness in the mind of the visitor or passer-by; the very opposite being the case when the farmery is deficient of the surroundings of live stock, stacks of corn, and actively employed servants, which are popularly and withal truly supposed to represent the very essence of rural prosperity and wealth. The old habit which exists in many districts of leaving a few noble stacks of wheat over the winter, to be thrashed in spring for the purpose of liquidating the rent then falling due, we consider an excellent plan—too good to be allowed to fall into disuse, which, however, almost threatens to be the case since the extensive introduction of steam thrashing-machines. Let the farmer be ever so well off, these stacks convey an idea of substantiality, not only to the farmer and his men, but to his landlord, who may possibly, when passing the corner of his tenant's stackyard at a smart pace after the hounds, yet have time to take a glance at its plethoric appearance, and feel satisfied that its owner will have no difficulty in making a prompt and smiling appearance on the approaching rent-day. Prompt payments make happy tenants and courteous landlords,

These prefatory remarks have been penned for the purpose of showing how all-important it is for the business of farming to be pursued as nearly as possible on a fixed system, and from which no deviations are made without sound reasons for so doing, or under exceptionally favourable circumstances.

We now proceed to notice a few of the leading points of the business of a farm during spring, on which a system of mixed husbandry is pursued. The duties which devolve upon the farmer at this season are multifarious; and both labour of body and anxiety of mind are entailed upon him in their performance. Still, to the man who loves his business, and pursues it with interest and enthusiasm, the labours even of the spring become lightened, and labour and fatigue become a profitable source of pleasurable enjoyment.

In referring to labour in connection with the farmer himself, we would not have it supposed that he holds the plough, or works a spade or shovel, with his men. That is not the fashion of the age, and few well-to-do men attempt it, unless some little thing they may have a taste for naturally; but, in attending to his men, and looking after the comfort and feeding of live-stock, the occupier of even but moderate extent finds abundance of employment, which, when pursued from early morn till the shades of evening, as at this season it must necessarily be, implies both labour and fatigue. It is not an essential element of success that a farmer should hold his own plough, nor yet engage in any of the more laborious operations of the farm; but it is vitally essential that he is much with his men, as he then gets the worth of his money, not only in getting his work done quickly, but well. The old saying—"If you want a thing well done, do it yourself; middling, see it done; if you do not care how it is done, send some one to do it"—stands as good in connection with agriculture as in any other business. It is a pleasant and profitable thing to superintend the operations of the farm; and, with suitable dress, no weather, almost, need confine a man to the house while anything can be done out of doors. There is a magical effect in the word "Come," when addressed by a farmer to his workers; it almost of itself is significant of success; it shows he is acting his own part in the day's duties, and that he is not above attending to his business. The very fact of his presence shows the men that he has a vital interest in what is going on, and has an inspiring effect upon them. The tenant-farmer who, living solely upon the proceeds of his farm, habitually says to his men, "Go," shuts his eyes in a great measure to his own interests, and, even with as good and well-intentioned men as the other could possibly have, will lose much of his profit. "The eye of the master maketh the horse fat," refers in an equal degree to all the departments of farm business as to his stable economy.

Of all the labours of the spring season, the proper preparation of the soil is undoubtedly the most important, it being the ground-work or foundation of all the other operations, and the leading feature of the season's employment. We shall therefore first notice the condition of the soil, and the necessary preparation required to fit it for the reception of the crop.

An all-important consideration is that it should be in good material condition, as it is a waste of time and money to sow corn on land in poor heart. When but little has been put in it, it is impossible to suppose that much can come out of it. If it is supposed or expected, the result must be disappointment. Land that will not respond to good treatment is not worth tilling at all; but as most soils under cultivation are grateful for liberal treatment, ungrateful land may very safely be set down as the exception and not the rule.

The difference of expense between moderation and liberality is not great; but the difference between the bulk and consequent value of the crops grown is extraordinary. Tilling land slothfully, cleaning imperfectly, and manuring but slightly, takes nothing from either the rent or taxes, nor does doing every operation in the best manner add anything to these items. The seed required is the same, or, if there is a difference, it is in favour of the high culture. Having room to till in well-cleaned land, it can be put in much thinner without the slightest danger of its being stifled with weeds.

The difference of expense between indifferent farming and high farming we thus find to be comparatively little, consisting principally of a little more attention to cleaning, involving somewhat more attention, but almost no expense when attended to at the proper period of the year, and a moderately-

increased expenditure in feeding the land—say, from 23 to 25 per acre. The difference between liberality and moderation, not to speak of niggardliness, when the crop comes to be reaped, is especially noticeable. In an ordinary year, from 2 to 2½ acres in good heart will produce sufficient bulk to complete a stack of fourteen feet in diameter; whilst land quite as good naturally, but grudgingly treated, may not produce as much as to fill that size of stack from six or seven acres. It can easily be conceived that there will and must be a great difference between the receipts of two such farms as we have now supposed. On the one there is a large quantity to send to market to be turned into the current coin of the realm, and yet abundance left to feed the working and other stock of the farm, and great wealth of straw for litter. The other is quite the reverse, as there is but little to sell unless by pinching the stock; and the bulk of straw is so small, that the animals can scarcely ever be permitted to have a comfortable bed under them, retarding the growth of the animals, and even injuring their health, besides making but little bulk of manure for the ensuing season. Poor farming is but too frequently to be met with in these islands; but we consider that it is not always want of energy or skill that causes sorry culture, but rather want of capital. Most men in taking land seem anxious to have as much acreage as possible, without calculating whether they have capital sufficient to work it, and the usual result of such short-sightedness is that the tenant from the day he enters on his holding is hampered in all his transactions, and finds himself utterly unable to do his land sufficient justice, and very probably, while having all the trouble and expense of a hundred acres, gets only the return he might under more fortuitous circumstances reasonably expect from fifty.

The years pass on, and can never be recalled; and it is well when time and opportunity are afforded to improve it, and not allow a single season to pass without giving the soil its proper share of attention, and supplying it with abundance of food. Let the land be in ever such good heart, an extra crop taken from it puts it back wonderfully, and unless treated immediately afterwards with extra liberality, may not be so good for years. It is an easy task to break the heart in land, but both a tedious and expensive one to recover it again. Luckily, the restrictions in most leases with regard to the repetition of white crops prevent this being done often, or to any considerable extent, even where a disposition does exist to follow such a course; yet most farmers have seen instances where, owing to a peculiar combination of circumstances, it has been done, and the land permanently injured. A few years ago a very striking example of the injurious effects of over-cropping came under our own observation. The strip of land to which allusion is made amounted to forty-five acres, and was at one time very fine grass land, capable of finishing a bullock, which, we think, is nearly the highest meed of praise that could be awarded to any land, however fertile. Although considerably elevated, the surface was deep, so much so that a crowbar could, with a few strokes, be driven down to half its length. A former occupier was also landlord, and, becoming reduced in circumstances, did his utmost to take what he could out of the land before having finally to give it up. The mode taken to make a good deal of money in a short period was a most effectual one, and was as follows: The grass surface was pared and burnt, and let out in small lots at a high rent for potato ground. The following season wheat was taken; and afterwards, in succession, three crops of oats. No kind of grass-seed was put in; but, on the cropping being given up, on account of the thorough exhaustion of the soil, couch, bent, and all the other followers of worn-out land were quietly allowed to take possession, and did so to the almost utter exclusion of the more nutritive of the natural grasses. In this state it lay for many years, having been grazed during that time with sheep and young cattle, which, however, could scarcely pick up as much as would keep them living. The land changed hands several times, but eventually was purchased by a man of sufficient means to attend to its improvement.

Now, what we wish particularly to draw attention to is the state of this land when broken up. Thoroughly impoverished when let out to the miserable pasture now described, it was just as impoverished when again broken up; and when the fresh mould was exposed by the plough, not a particle of decomposed vegetable matter was to be seen, the soil being mere sandy earth, which it would be utterly impossible to

designate by the name of loam. The first crop of oats on each field, when broken up, was a wretched affair, scarcely paying seed and labour; and it was only after a succession of years, during which dung and lime and artificial manures were unsparingly applied, that the fields began to put on a decent appearance, and repay by improved crops a portion of the outlay.

More rest will not enable an exhausted soil to recruit itself; and letting impoverished fields out to pasture, with the expectation that the droppings of the sheep and cattle which graze them will have this effect, is a delusion, and mere waste of time and money. Land should only be laid down to pasture in such a state of fertility as will enable it to nourish properly the animals that are placed upon it, as it is only under such circumstances that the stock can improve the land. When improving themselves, they improve the pastures by the superior quality of the droppings; but when the pasture is miserable, then both animals and land are alike starved.

Deep cultivation and a thorough mixing and turning over of the soil, with but a very little assistance from putrescent manure, enables land to give moderately good crops without injury to its permanent resources. Trenching and subsoiling, therefore, form a much better mode of renovating and improving exhausted or neglected land than the lazy mode of laying it out to grass for a few years.

Large quantities of the land held by small farmers in Ireland, which, in consequence of the repeated failure of the potato crop in 1846-7-8 and 9, had to be given up to the landlords, and by them formed into large holdings, and either farmed by themselves or let to men of some capital, gave excellent crops of wheat, barley, oats, mangolds, and turnips—far, indeed, beyond what was expected. The reason assigned for the apparent anomaly of land given up by broken men giving good crops, was the repeated working-up and turning-over of the soil to a considerable depth in the cultivation of the potato, under the peculiar, and we believe almost exclusively Irish system of "lasy-beda." By this process, repeated year after year, the soil had become completely mixed and aerated, and so soft and friable that the roots of the plants could penetrate to any distance in search of food without meeting a hard pan impervious to their delicate fibres, and which would be poisonous to the plant even if they could enter it.

It may be thought that the period of spring, when the land is just on the point of being seeded with spring corn, is not the time to be attending to its manurial condition—assuredly it is not, but the absence of condition will then be brought very forcibly before the mind's-eye of the agriculturist. No man, not even an indifferent or careless servant, likes to sow valuable seed on poor or badly-prepared land, knowing well that the essential and primary elements of success being wanting, the most favourable seed-time and propitious growing season can never of themselves succeed in producing a heavy crop of corn. It is a bad sign of land when it stands up stiff and glassy after the plough, requiring the constant attention of the ploughman to get the furrow-lice into its proper position, and after all leaving numerous yawning gaps in which the seed gets lost unless the precaution has been taken to have the land-presser accompanying the plough. When the seedsman, be he farmer or servant, finds the soil soft and crumbling under his foot, friable and loamy-looking, he is in good spirits and does his work with a will; these conditions of soil he intuitively knows will under ordinarily favourable circumstances give an overflowing return in autumn. The state of the soil as to dryness and capability for working freely requires both care and consideration when seed-time comes round. A good "tid," as it is termed in some districts, is of great importance to the future well-doing of the crop, and when the opposite is the case it is equally injurious. There is comparatively little danger with land just broken-up from grass, however short a time it may have been down, a few hours' drying being sufficient to bring it into working condition; but it is not so with broken or tillage-land coming after green crop: its condition must be carefully attended to, and on no account a horse allowed to set his foot on it until the sun and wind has again brought it into working order. It is very bad policy to force field-work in broken weather at all times, but if there is one season more than another that this is especially the case, it is that of spring, a false step then being irremediable for the entire season; better far to have the horses standing idle in the stable for days, nay even

weeks consecutively, than having them on the land when it is not in a fit state for working. Every step they take is an injury, and when corn is sown on land that has been so poached, instead of growing vigorously it has to struggle for mere existence. Some farmers are particularly good at catching the "tid," and seldom or never suffer from having worked the soil when out of condition, let the season be ever so trying; while others seldom escape more or less injury through injudicious haste or over-anxiety, unless in exceedingly favourable seasons. We find most farmers very particular about the quality of seed they use, and it is highly necessary that they should do so, as the future well-doing of the crop necessarily depends greatly on its vitality being uninjured. It is not requisite that the sample should be very grand to look at, every grain looking as if it had been cast in a mould and then dipped in varnish, such as we see nearly every year imported from the Lothians and other counties on the east coast of Scotland (less frequently than usual this season, however, on account of the late harvest experienced there last year), very familiar examples of the striking *shininess* here alluded to being found in samples of Hopetoun and potato oat. In choosing seed two things require to be carefully attended to, so that there may be no disappointment in the equal brading of the crop: *First* it should have been properly ripened, and *second* it should be sweet and fresh. When corn that has been cut greenish is used for seed, there are numerous grains which do not vegetate at all; and many others, which although they make a start are yet so weak that they are incapable of reproduction, and wither away shortly after appearing above the surface. Again, corn that, however well ripened, has not been allowed sufficient time to mature in the field before being stacked, is not fit for seed, as, even if it did not heat to a noticeable extent, it will nevertheless be musty, and should therefore be discarded. Tainted samples of this sort are easily recognized, both by sight and smell; the least heat changing the colour of the grain, and imparting a very disagreeable odour to it. A sample of seed that had the appearance of being properly ripened, was firm and hard in the hand, and smelt fresh and sweet, we would have no hesitation in sowing, even if not remarkably round and full-bodied, and have every confidence in its success. A mistake is very frequently committed in preparing seed-corn for market, by over-dressing it, which is a very fatal mistake, more particularly with barley, and more generally with it than any other seed-corn. For the purpose of adding to the weight, and also for making the sample more strikingly fine, the awns are chipped off so close to the body of the grain that the germ is injured, often to a most serious extent, and vegetation rendered altogether hopeless. We have frequently experimented with seed-barley that had the appearance of having been over-dressed in preparation for sale, and have in several extreme cases found that not more than half of them sprouted, the remainder remaining as inert as if they had been little chips of wood. Our attention was drawn to the matter in the first instance by the excessive thinness of the brail on a field seeded with barley, the field being in capital condition, and the sample the very finest possible. On placing a few pots of the seed in a moderate hot-bed we found the results to be as above stated, which fully explained the meagreness of the plant, and engendered a degree of caution for the future, which has at times been very serviceable.

A great diversity of opinion and practice exists in different counties, and even districts, with regard to the best mode of committing the seed to the bosom of Mother Earth. In some parts the drill is preferred; its advocates having many arguments in their favour, the most prominent of which are the saving of seed, and the opportunity afforded for stirring the soil and destroying weeds by the hoe during the period of growth.

Both of these reasons are weighty ones, yet the proportion of land seeded by the drill throughout the kingdom is small in comparison with that sown in the old-fashioned manner by hand. The contrast between the two methods is rather remarkable, being diametrically opposite to each other. The very ardent supporter of the drill, ploughs his lays over quite flat, harrows down, then rolls with the heaviest roller he can procure, so as to prevent a particle of grass from getting up between the opening of the alics, and to get as good and smooth a surface as possible for the action of the drill.

The follower of the old broadcast system takes the utmost care to plough his land so that he shall have as high a crest

as possible, to give the necessary amount of covering, closes the slices with the utmost care, and cuts the breadth and depth with mathematical precision.

He takes care to have the ploughing neat and narrow, six inches by nine being about the average depth and breadth, so that the seed shall be as equally distributed as possible, and when done as it ought to be, the crop on coming over ground has nearly the same regularity as that put in by machine.

Notwithstanding the opposition to the drill, with its diminished quantities of seed, and its almost total exclusion from many parts of the country, it has decidedly the advantage of the hand in tillage land, as an opportunity is given by it for hoe culture previous to the sowing of the clover and grasses, thus benefiting the corn crop, and creating a fresh surface for the reception of the small seed without tearing the crop with harrows to get a fresh surface, as must be the case with the hand-sown, often injuring the corn very seriously.

In sowing corn by hand on tillage land we find it a capital plan to grub thoroughly, harrow it down fine, then sow, and cover with small seeding ploughs. When the drill is not used this is a much better mode than ploughing up the land and covering only with the harrows, particularly on light land. The covering is more regular, less of the seed is exposed or partially covered, the straw is sounder, and the grain consequently of better quality and more of it. To secure an even and healthy hit of the small seeds, there is no time better to sow them than just immediately after the corn, while the land is fresh, providing the season is sufficiently far advanced to permit of its being done without danger. When put in then they scarcely ever miss, unless rotted out by the early stretching of a very heavy crop. Even of this there is not much danger, as the clovers and grasses having had an early start they are well forward ere the dangerous period arrives, and their strength having interfered to some extent with the growth of the corn, over-luxuriance of straw is in a great measure prevented.

When the grass-seeds are hand-sown, it is a great saving of trouble to the seedman, and effectually prevents the slightest portion of the ground being missed, to send a man over the

field with a horse and light plough, to mark it off into twelve-foot beds or stretches. A smart horse and man get over a great extent of surface in a few hours; and the regularity ensured amply repays the trouble.

As much diversity of opinion exists as to the quantity of seed-corn required for an acre as there does regarding the best modes of committing it to the earth. As a rule, when put in by the drill, the quantity of seed used is just about half what is required for an acre when sown by hand. The average quantities by the latter method are: Wheat and barley 12 stone, white oats about the same, and black oats 14 stone. Those who sow by the drill, and use scarcely half these quantities, are apt to ridicule their more slow-going and cautious neighbours who stick to old habits; but, notwithstanding the march of intellect, and the almost universal smashing up of old habits and customs, the system of sowing a large quantity of seed per acre by hand still prevails, and is likely to be continued indefinitely.

The sowing of spring corn, in the British Islands, extends over a very considerable period, beginning in favourable seasons and situations, as has been the case this season, about the middle of February, and seldom ending until the beginning of May. Difference of latitude explains this in some measure; but protracted bad weather, which not unfrequently sets in, sometimes prolongs the spring work to the very last moment almost when the seed can be sown, with a reasonable expectation of being able to mature a crop, even in the earliest situations.

The anxiety of the agriculturist is, consequently, very great, even in the best of times; and men and horses have to exert themselves to the utmost, to make the most of good weather while it lasts. Horses that have been well fed during the winter months will now not only gratify the eye of their owner by their handsome appearance in the yoke, but, by their lasting qualities therein, and by the large amount of work they get through, will repay him for the extra care he has bestowed. Good hay, oats, and beans form now the best food for the farm-horse, liberality in this instance being true economy. J. S.

BULSTRODE'S IMPROVEMENTS IN STEAM CULTIVATION.

The promotion of steam cultivation is the great question of the day with agriculturists; and, so far as present practicability is concerned, we may safely conclude that they have arrived at the conviction that, amongst the various systems which have been brought forward, the only ones available are those, whether Fowler's, Smith's, or Howard's, when are worked on what is called the "round-about" system, where the heavy machinery remains stationary at the headland, whilst the ploughing or cultivating implement traverses and stirs the soil, without any material pressure upon it, to neutralize, more or less, the beneficial operation. The object, therefore, of the mechanists must be to effect improvements as experience may suggest, whether for the more easy and effectual stirring of the soil, or—which is of the first importance to agriculture—for the saving of time in the operation.

We have been led to make these observations from having recently inspected an invention by Mr. W. Bulstrode, of the Mount Farm, Cookham Dean, Berks, by which a saving of time—palpable enough to the looker-on—is effected, equivalent, in the day's aggregate, to an additional cultivation of from one to one-and-a-half acres per day. This object is effected by means of what is termed a "snatchblock sling," which consists of a round, tubular iron bar, to which the two anchors and the snatchblock are attached by moveable rings. This bar is of any length the owner may require, the one we saw at work being five or six feet. It is so contrived that it may be shifted forward, so as to cover the next bout of the plough or cultivator whilst it is traversing its return-course over the land; consequently, the change of position, which formerly occupied thirty-five seconds, can now be made in from eight to ten seconds. Now work, on the field in which we saw the machinery, was performed at the rate of a bout in 2½ minutes, or 165 seconds, to which the stoppage,

under the former system, of 35 seconds, must be added, making 200 seconds. If we then deduct ten from thirty-five, a saving of 25 seconds per bout is effected, which is equal to one-eighth at least; so that nine or 9½ acres per day can be cultivated where only eight were by the old system. Nine is the minimum advantage; for one farmer who employs the "aling" states his gain to be an acre and a half per day, or about 19 per cent. At the lowest estimate, it amounts to 12½ per cent., which, on a farm of 800 acres, effects a saving of 8s. per day, or £40 per annum, besides doing the work more expeditiously. This improvement is adapted to every variety of the round-about system, and to the plough, cultivator, harrow, roll, or drill. It may be made so as to take any width of land required; it is easier for the men, because they can shift it while the cultivator is going the bout, and without the hurry observable in the old plan.

Mr. Bulstrode has patented the aling; but he has effected an improvement in the snatchblock itself by the insertion of a strong iron bar, both above and below, the upper one being inserted into the wooden cap of the implement. These bars bear the chief strain of the rope or chain, and enable him to reduce the weight of the snatchblock from 3 cwt. 0 qr. 16 lb. to 1 cwt. 1 qr. 10 lb., there being now but little strain, comparatively, on the wheel.

A third improvement has been made in the drum of the windlass, by the addition of what we call a "gallows," on the upper ledge of which the drums are suspended by a chain and two pulleys, by which means the two sections of the drum are balanced, and are much more easily shifted when the return of the cultivator renders it necessary to reverse the action of the cultivator. This improvement is only applicable to Howard's windlass.

Mr. Bulstrode estimates the saving in labour at 2s. per day on the pay of one man.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL, Wednesday, March 4, 1868.—The Duke of Richmond, K.G., President, in the chair. Present: The Earl of Shrewsbury and Talbot, Lord Bridport, Lord Chesham, Lord Tredegar, Lord Vernon, Sir J. V. B. Johnstone, Bart., M.P., Sir A. K. Macdonald, Bart., Sir T. Western, Bart., M.P., Mr. Acland, M.P., Mr. Amos, Mr. Baldwin, Mr. Barnett, Mr. Bowly, Mr. Bramston, Mr. Cantrell, Colonel Challoner, Mr. Clive, M.P., Mr. Davies, Mr. Dent, M.P., Mr. Druce, Mr. Edmonds, Mr. Braudreth Gibbs, Mr. Holland, M.P., Mr. Hornsby, Mr. Wren Hoskyns, Mr. Jonas, Colonel Kingscote, M.P., Mr. Pain, Mr. Randall, Mr. Read, M.P., Mr. Rigden, Mr. Sanday, Mr. Robert Smith, Mr. Shuttleworth, Mr. Stone, Mr. Thompson, Mr. Torr, Mr. Turner, Mr. Webb, Mr. Wells, Major Wilson, Mr. Frere, Professors Simonds and Voelcker.

The following new members were elected:—

Baldwin, Thomas, Earlswood, Tarworth, Hockley Heath, Lincoln

Bates, John, Umlerleigh House, near Barnstaple

Beart, Charles, Stow Bardolph, Down Market

Beer, James Henry, 29, St. George-street, Canterbury

Bell, Ancell, The Manor House, North Kyme, Sleaford

Brandford, John William, March, Cambridgeshire

Bruxner, Rev. George E., Thurlaston Rectory, Hinckley

Bulkeley, C. Rivers, Bodillyn, Ruabon

Cartwright, Robert Norton, Newbiggin, Morpeth

Casswell, George, Gosberton Bank, Spalding

Cox, William S., Sansom Wood, Calverton, Nottingham

Daintree, John Osborn, The Grange, Isleworth, St. Ives

Danby, Francis, Middledale, Driffield

Derham, William, Tottenham

Eden, Peter, Cross Lane, Salford, Lancashire

Eggleston, E. J., Great Peatling, Lutterworth

Eggleston, W., Wigston Magna, Leicester

Freeman, Edwin, Chilton, Thane

Haig, George Augustus, Pen Ithon, Newtown, Montgomeryshire

Hambleton, Arthur P., Harley Thorn, Newcastle, Staffordshire

King, Walter John, Ipswich

Knight, Joseph, Glenparva Manor, Leicester

Lane, Lieutenant-Colonel J. H. B., Lilly Hill, Bracknell, Berks

Painter, Benjamin, Burley-on-the-Hill, Oakham

Parrott, Edward, Shirburn, Tetsworth, Oxon

Perkins, Walter, Southampton

Phipps, Filmer, River, Dover

Piercy, Rev. John Morpeth W., Slawston Vicarage, Market Harborough

Plant, Henry W. C., Burley Fields, Stafford

Sanday, George Henry, Holmepierrepont, Nottingham

Staveley, John, Dotterill Park, Driffield

Straker, Henry, Riding Mill, Northumberland

Stubbs, William, Rickerescote, Stafford

Summers, Thomas, jun., Crowgreaves, Shifnal

Swanwick, Russell, The College Farm, Cirencester

Timmis, Charles Brick House, near Stafford

Turner, Thomas, Mitchfield, Rom, Herefordshire

Wilson, William, Park Farm, Cholmondeley, Nantwich

FINANCES.—Lord Bridport, chairman, presented the report, from which it appeared that the secretary's receipts during the past month had been examined by the Committee, and by Messrs. Quilter, Ball, and Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on Feb. 29 was £1,648 12s. 1d. The arrears of subscription are considerably reduced through the agency of the Society's solicitor, but there still remains a large sum in arrear from members residing

at or in the neighbourhood of Newcastle-on-Tyne, and the Committee recommend that the secretary be authorized to take legal proceedings to recover the amount there and elsewhere, if necessary. This report was adopted.

JOURNAL.—Mr. Thompson, chairman, reported that the forthcoming number has been unavoidably delayed; but will, it is hoped, be in the hands of members in about a fortnight. The essays competing for the Society's prizes for 1868 have now been received. In Class V.—subject, "The Preservation of Timber"—there is no competition. In the other 10 classes the number of essays sent in is full average.

IMPLEMENTS.—Colonel Challoner, chairman, reported that the Committee had carefully considered the series of resolutions passed at a meeting of the agricultural implement manufacturers on the 3rd of February, and referred to the Committee by the Council, and that the following resolutions were unanimously adopted:

(1.) That in order to reduce the number of implements to be tried at each Show, so as to afford time for thorough testing, it is desirable that a further subdivision in the classes should be made, and your Committee recommend the adoption of the following classification, to commence in 1869:

1869.—*Machines and Implements for the Harvesting of Crops*: Mowing machines, reaping ditto, haymaking ditto, hay collectors, horse rakes, carts and waggons, liquid manure carts.

1870.—*Fixed Engines, worked by Steam and other Power, and Machines for Preparing Food for Stock*: Fixed engines, chaff cutters, cake breakers, corn crushers, corn mills, horse mills, turnip cutters, root pulpers, steaming apparatus, dairy implements, bone mills, guano breakers, coprolite mills, the machinery, draining tools, flax-breaking machines, horse gear.

1871.—*Machinery for the Cultivation of the Land by Steam-power and Traction Engines*.

1872.—*Portable Steam Engines and Machines and Implements for Preparing Crops for Market*: Portable steam engines, thrashing machines, straw elevators, seed shellers, corn dressing machines, corn screens, barley hummellers, corn drying machines.

1873.—*Machines and Implements for the Tillage of Land by Horse-power*: Ploughs, harrows, rollers, clod-breakers, cultivators and scarifiers, digging machines, potato diggers, drills, horse-hoes, and manure distributors.

(2.) That it be considered an invariable rule that the trial of each class of implements shall take place under the superintendence of three judges.

(3.) That the prize-list and all the conditions connected with the exhibition and trial of implements shall be published at least twelve months beforehand, and, if practicable, not later than the 1st of July in the year preceeding each Show.

(4.) That the trials shall commence sufficiently early for them all to be concluded, and the awards made known, before the opening of the Show to the public.

(5.) That at Leicester the trials of tillage implement-worked by horse-power shall commence on Thursday, the 9th of July; and all such implements, if intended for trial, must be delivered in the showyard not later than Tuesday, the 7th of July.

(6.) That a preliminary trial of machinery for the cultivation of the land by steam shall take place at Leicester, and a selection of machines then made, for further trial after harvest.

Mr. Larking, the representative in England of the Viceroy of Egypt, having expressed to the Society the great interest taken by his Highness in promoting the science of agriculture, and also the pleasure derived from a visit to their Show-yard at Bury St. Edmund's during his short stay in this country, announced the

anxiety of his Highness to offer a Prize Cup to be awarded by the Society at their next show of agricultural implements, and the Committee recommend that the offer of his Highness the Viceroy of Egypt, of a prize "for the best implement for the cultivation of the soil by steam-power, combining strength with simplicity of construction, for use in foreign countries, where skilled labour for repairs is difficult to be procured," be accepted by the Council.

This report was adopted.

LEICESTER MEETING.—Mr. Thompson reported the desire of the local Committee for information as to the number of beds required for judges' lodgings, which the secretary was directed to furnish. Mr. Torr had reported that the levelling-in the Show-yard is extremely well done, to a greater extent even than had been asked for, and will be all finished in a week or ten days. The new road is all gravelled and finished. It is recommended that the admission to the Grand Stand shall be by payment of 2s. 6d. each person on each day of the Show. An application to admit a printing-press into the Show-yard was declined, on the ground that it is not for sale. This report was adopted.

SHOW-YARD CONTRACT.—Exhibitors will be charged for shedding in the machinery-in-motion yard at the rate of 5s. per foot for the 25 feet span by 12 feet to the eaves; and 8s. 6d. per foot for the 20 feet span by 10 feet to the eaves.

The plan of the Yorkshire horse-boxes was approved by the Committee.

VETERINARY.—Mr. Dent, M.P., reported that the Committee have received the report of the Governors of the Royal Veterinary College, who strongly urge the necessity for an efficient inspection of all imported animals, and the establishment at the ports of importation of quarantine establishments. They also call attention to the unauthorised use of the title of Veterinary Surgeon by persons in no way qualified to discharge the duties for which genuine and attested veterinary surgeons should be prepared, and the incompetency of many persons who were appointed veterinary inspectors during the existence of the cattle-plague. To remedy these evils the assistance of the Legislature is required, and both on this subject and the question of the treatment of imported animals, the Governors of the Royal Veterinary College request the co-operation of the Council of the Royal Agricultural Society of England.

Included in the general report is a special report from Professor Simonds, from which the following extracts, relating to contagious diseases of cattle, sheep, and pigs, will be found to contain matters of considerable interest:

"The chief event of public interest connected with veterinary science has been the complete extinction of the cattle-plague, notwithstanding its re-introduction into the metropolis at two separate occasions, early in the year, by the process which is familiarly called 'stamping out,' and by the isolation of the diseased animals. This system was from the first advocated by the Professors, as the only effective means for freeing the country of the disease.

"It is gratifying to observe that public opinion has at length incurred in the correctness of this view, as thereby an actual security may be afforded against the spread of the plague in the event of its re-appearance in this country.

"No case of the malady has been officially reported since ptember 7, and there are no reasons to believe that any case is occurred subsequently.

"Alarms have, nevertheless, been raised in several places, and some of these have been supported by the opinions of the veterinary inspectors. No reflections should, however, be cast the inspectors in consequence of this, for experience has over that there are few diseases in which the symptoms are varied, and so little diagnostic of the true nature of the

malady, as in cattle-plague; but the highly infectious nature, and the non-spontaneous origin of the plague, are undoubtedly its abiding properties. Every supposed outbreak ought, therefore, to be investigated through the established data. Malignant apthæ, gastro-enteritis, and enteric fever often present symptoms which are identical with those seen in some cases of plague; and as these diseases have been more than usually rife during the last few years, the difficulty under which veterinary surgeons have been placed, when called upon to give prompt and decided opinions, has been considerably increased. By the direction of the Lord President of the Council I attended the International Congress of Veterinary Surgeons held at Zurich, from the 2nd to the 8th of September, and took part in the discussions upon cattle diseases, especially those of a contagious nature. I also, by the request of the Royal Agricultural Society, made myself more practically acquainted with the Continental cattle traffic, so as to have a better understanding of the risk which is incurred of the re-introduction of the cattle-plague by our foreign importation. This risk is beyond doubt greatly increased by the extension of the railway system to the extreme confines of Eastern Europe, the home of the pest. Within a few days, often less than the ordinary period of incubation of the plague, cattle may be conveyed from Poland, Galicia, Hungary, and Lower Austria to England, and bring with them the seeds of the disease. The same facility of transit has widely diffused the area of danger in Bavaria, Moravia, Silesia, Bohemia, &c.

"Countries which furnish a very large proportion of our supplies are now rarely free from the plague, and at this very time the disease is prevalent in Moravia and Silesia.

"Among the resolutions come to by the Congress was one to the effect that the experience gained by the great spread of the cattle-plague, during the last two years, had shown the perfect inutility of every means of clearing a country of the disease short of killing the infected animals and disinfecting everything with which they had come in contact. The Congress also arrived at the conclusion that the same experience had inconceivably proved that sheep and goats were highly susceptible of the infection of cattle-plague, and that in numerous instances they not only contracted the disease themselves from cattle, but had re-communicated it to cattle and other ruminating animals. These conclusions are of the utmost importance, especially when it is remembered that in this country there are still many who do not believe that sheep can become affected with the cattle-plague. It should be further stated that these conclusions were unanimously adopted, and that little short of 200 delegates from nearly every Government of Europe, including the Professors of the several schools, not excepting even those of Russia and Turkey, were present at the meeting.

"With regard to other diseases of a contagious nature affecting cattle in particular, I have to observe that both pleuro-pneumonia and the foot-and-mouth disease are again on the increase, now that the restrictions upon the movements of cattle, rendered necessary by the plague, have been removed. It was observed with satisfaction during a continuance of the restrictions alluded to, that these diseases were so diminished in frequency as to render their existence in the country comparatively of little importance. The fact is of great significance, as illustrative of the plan by which the losses hitherto incurred were greatly lessened, and by which such losses may hereafter be diminished if the disease is not entirely got rid of. It is to be remembered that pleuro-pneumonia is just as fatal now as when it was first observed in England, and medical treatment is of no greater avail in staying its progress. Prophylactic measures are alone useful, and the one which stands before all others for simplicity and effectiveness is that of preventing a free intercommunication between bovine animals when suffering from the malady. As compared with recent years, but few cattle or sheep have been admitted into the Infirmary, and none of the cases call for any special notice in a report of this kind.

"Several animals of both classes have, however, been kept throughout the year for experimental purposes, and especially for testing, by inoculation, the various morbid products of cattle alleged to be the subjects of the plague. In the recently-reported outbreak of this disease in Berwickshire, where the conclusion I arrived at was directly opposite to the expressed opinions of the Professors of the Edinburgh school and three other veterinary surgeons, three animals, two heifers and a steer, were experimentally inoculated with matter obtained

from one of the Berwickshire animals, but without any ill-effects whatever being produced.

"At the present time some experiments are being conducted for ascertaining, if possible, the length of time the cattle-plague virus will retain its infectious properties.

"The failure hitherto of the inoculations, owing to the length of time the virus has been kept, together with the non-existence of the disease in the country, and the great caution which will have to be observed in dealing with such a virulent animal-poison, should fresh virus be procured, increase considerably the difficulties of arriving at a true solution of the problem, and probably prevent its being now obtained.

"Other experiments are being continued to test the supposed contagiousness of 'foot-rot' among sheep. The opinion that the disease is a catching one is of ancient date, and pretty widely diffused; but it may be doubted whether this opinion be positively correct.

"In due time the result of these experiments will be reported.

"The experiments with the small-pox virus of sheep, alluded to in my report of last year, have shown, that after being preserved for five months in the ordinary manner on ivory points, it still retains sufficient activity to be used with success. A fact of this kind is of much practical importance, although experience may have shown that in natural outbreaks of the disease fresh sheep may occupy with safety the places in which infected animals had been kept.

"In concluding this report it only remains that I should state, that within the last few weeks my attention has been officially called to a case of trichiniasis in a pig. The formidable entozoa on which this disease depends, and which have produced so sad a destruction of human life in Germany and elsewhere, among persons partaking of infected pork, would thus appear to have gained a footing in this country. To what extent this may be the case cannot at present be ascertained. The pig which was found to be affected by this disease was reared under very peculiar circumstances, and the discovery of its flesh being loaded with trichinias was made in time, it is hoped, to prevent any mischief being done. The case is under investigation by the order of the Government, and no means will be spared to dispel the mystery by which it is surrounded.

"The person who made the discovery is a practical microscopist, and as he had preserved portions of the flesh in various antiseptic fluids, I have been enabled to procure a supply of it, by which the destructive influence of these fluids on the life of the entozoa may be tested by feeding some of the small carnivora and other animals with the trichinised flesh. These experiments are being carried on within the College, and the results of them, as also of others mentioned in this report, will in due time be laid before you."

In the month of August, 1865, Mr. Ernes was sent by the Government to a Veterinary Congress at Vienna. On his return he was requested to furnish a report to the Society of the matters discussed. This report was received in November, 1865, and referred by the Veterinary Committee to Professor Simonds. The paper had been mislaid for some time, and Professor Simonds reports that its contents principally refer to the details of the proceedings of the Congress, and are of little present interest. But inasmuch as Mr. Ernes was put to some expense and trouble in translating and transcribing these minutes at the request of the Society, the Committee recommend that £10 be paid to him for the trouble incurred. This report was adopted.

CHEMICAL.—Sir J. Johnstone, Bart., M.P., presented the following report:—

"Professor Voelcker reported that he had received three reports on field experiments on Potato and Clover culture, indicating the utility of mixing phosphatic manures with salts of potash, instead of using them separately, thus establishing the fact that the use of phosphates alone, or salts of potash alone, have but little effect; whereas the combination of the two had produced most satisfactory results. This has been especially the case with respect to Clover experiments, conducted by Mr. Coleman at Eecrick Park. That this is not an accidental result, is proved by similar experiments on the Con-

tinents. Arrangements have been made for further field experiments of a similar character during the current year.

"The Professor has produced four papers for the last and forthcoming *Journal*, which are annexed, viz., in vol. iii., part 2, 1867.—1. Field Experiments on Root Crops. 2. Composition and Nutritive Value of Anthyllis Vulneraria (Lady's Finger) as a Fodder Plant. In vol. iv., part 1, 1868.—3. On the Solubility of various forms of Phosphate of Lime, and the efficacy of the different States in which Bone Manures are used in Agriculture; and, 4. On the Composition and Nutritive Value of Trifolium Striatum; and for which we ask the usual grant.

"Four samples of Cake, containing traces of the Curca Bean, which grows at the Cape de Verd Islands, have been lately forwarded to Professor Voelcker. This cake is of a very poisonous character; one sample was from South Wales, and two others had been purchased at Hull."

This report was adopted.

EDUCATION.—Mr. Holland, M.P., reported the names of Mr. Edmonds and Mr. Jacob Wilson as examiners in practical agriculture. The number of candidates entered for examination is 18. The examinations will take place as follows:—

Tuesday, 21st April.—Science and Practice of Agriculture, 9 a.m. to 1 p.m. Chemistry, paper and viva voce, 2 p.m. to 4 p.m.

Wednesday, 22nd April.—Mechanics, 10 a.m. to 1 p.m. Land-surveying and Book-keeping, 2 p.m. to 4 p.m.

Thursday, 23rd April.—Geology, 9 a.m. to 11 a.m. Veterinary Science, 11 a.m. to 1 p.m. Botany, 2 p.m. to 4 p.m. *Viva voce* in Agriculture, morning and afternoon.

This report was adopted.

COMMITTEE OF SELECTION.—Mr. Thompson, chairman, reported the recommendation of the Committee that the name of Mr. Robert Charles Ransome, of Bolsoa Hill, Ipswich, be submitted to the Council to fill the vacancy caused by the resignation of Mr. Hudson. Mr. Ransome having been proposed by Mr. Thompson and seconded by Mr. Randell, was then unanimously elected a member of Council.

FOREIGN CATTLE.—Mr. Read, M.P., having moved that this Council considers the recommendations of the Governors of the Royal Veterinary College can only be successfully carried out by the establishment of separate markets for the sale and slaughter of all foreign fat animals and effectual quarantine of all foreign store stock at the ports of entry, was seconded by Mr. Jonas, and the motion was carried unanimously. A copy of the resolution and of the report of the Governors was directed to be forwarded to the Lords of the Privy Council.

THE FOREIGN CATTLE TRADE.—The object of the importation of foreign cattle being mainly to increase the supply of meat, it is an apparently simple thing to arrange for transmitting the dead meat instead of the live cattle. If the animals were slaughtered on the other side of the water, the amount of security would be greater than if they were slaughtered at the ports of entry, because all danger from infected hides, blood, and manure would be avoided; but either plan promises greater security than the importation and subsequent free movement of live cattle. The plan of slaughtering within a limited area at the port of entry is now on its trial, and it remains to be seen how far the import trade will be interfered with, and what effect the system will have upon the price of meat. It is certain that, whether the animals are killed here or abroad, a large quantity of meat on certain occasions would be spoiled; and a considerable part of the available offal, which will not bear packing and carriage, will on occasions be lost to the poor consumer. There is also a great difficulty in regulating the supply according to the demand, and in consequence it will frequently happen that there will be an excess when the demand is diminished, and a deficiency, depending upon weather and other causes, precisely

at the time when an abundance is necessary. Such matters of detail, however, do not particularly interest the public as consumers, or the farmer as a producer, although they are matters of serious importance to the trader. As particulars of commerce they will in all probability find their level, and in time those who are most interested will accommodate themselves to the new state of things. The important question for the agriculturist is: What amount of security is gained by the arrangement? and upon this point it is necessary to suggest that an excess of confidence may lead to disastrous results, the security depending entirely upon the absence of disease among the imported animals. If infected beasts are landed in our country

their confinement to a restricted area will not absolutely prevent the propagation of disease: persons who are engaged about foreign stock, butchers who examine them with a view to purchase, and salesmen to whom they are consigned, will all of them be similarly occupied in the market for English stock, and the disease may be thus conveyed to these animals. The risk of infection is much lessened by the system of slaughtering at the ports, but that absolute security is thereby obtained does not appear.—*Professor Brown in the new Journal of the Bath and West of England Society.*—[At the Farmers Club last month Professor Brown "regarded a Foreign Market as a settled question."]

EDUCATION OF THE FARM LABOURER.

TO THE EDITOR.

SIR,—As I have no doubt that your columns will contain a full report of the discussion which took place yesterday in the Council of the Central Chamber of Agriculture, on the above subject—a discussion in which I took part as an invited representative of the Commission on the Employment of Children, Young Persons, and Women in Agriculture—and as some remarks which I made in reference to the difference in the rate of wages in different parts of England were extensively misunderstood, and even their accuracy seriously called in question, I shall esteem it a favour if you will allow me space to state clearly what I meant to assert, and, further, to prove the correctness of the assertion.

I was speaking of the difficulty thrown in the way of giving a sound elementary education to the agricultural labourer's child, by the irregularity of his attendance during his nominal school-life, and by the very early age—eight, nine, or ten—at which, in many cases, that school-life terminated. I traced the prime source of this difficulty, not to the exigencies of the farmer, but to the poverty of the parent. I stated that the difference between 18s. a-week, which I am credibly informed is the present rate of wages in Northumberland, or 15s. a-week, which a gentleman in the room told me is the present wage in the East Riding of Yorkshire, and the 10s. a-week, which is the present rate on the Cotswolds, and the 9s. a-week which I found prevailing to some extent in the Union of Newent (containing parishes in the three counties of Gloucester, Hereford, and Worcester) is a difference that legislators and everyone else who approaches this question must bear in mind when they attempt to measure the ability of the farm-labourer to provide for the education, or to dispense with the earnings, of his child. I went on to say that I was aware this low rate of wages was in almost all cases accompanied with an allowance of cider, valued by the men themselves at 1s. or 1s. 6d. a-week, and that I found upon inquiry that they preferred the allowance of drink to its supposed equivalent in money; nor could I very well resist the force of the argument when a labourer at Newent put it to me in this shape: that "when a man's work is sometimes twelve or fourteen hours a-day on nothing but bread-and-cheese, a drop of drink is very comforting." I further added that I freely admitted that the weekly wage at any particular season of the year is not to be taken as the average measure of an able-bodied man's annual earnings when in constant work, and that, reckoning harvest-money and piece-work, I had been assured that in Sussex an efficient labourer would earn from £40 to £45; in Norfolk and Essex from £35 to £40; on the Cotswolds and in the Union of Newent from £32 to £35 in the year, supposing him—which, however, would be rarely the case—to lose no time; but

that, even so, there was such a disparity in the earnings of the same class of labour in different counties as to indicate a wonderful difference in the social condition, or at least in the available pecuniary resources, of the labouring man.

I am afraid that none of my remarks on this, which I felt to be very delicate ground, were relished; and I was told by more than one speaker who followed me that it was ground upon which I ought not to have entered at all. But the point in the statement which called forth most comment, and was met with the most vigorous counter-statements, was this—that there were cases in the Union of Newent of farmers paying their labourers at the present time no more than 9s. a-week. One gentleman reminded me that I had made the same statement to the Gloucester Chamber of Agriculture, that I had been contradicted there, and that I had retracted and apologized for the statement at a subsequent meeting in Newent itself. I quite admit that when I made the statement before the Gloucester Chamber it was contradicted; but the contradiction did not disprove it, and the only modification of it that I made to the Newent meeting was by saying that I was glad to find that, though 9s. a-week was paid in a sufficient number of instances to justify my statement, the more usual rate in the union was 10s.

I have before me the minutes which I took at the various public meetings which I held in the union of Newent, the information contained in them being given me by the landowners, clergy, and farmers who attended them; the accuracy of the minutes, which were read to the meeting before being signed, being vouched for by the signature of the chairman.

At my meeting held at Redmarley, for the parishes of Redmarley, Staunton, and Bromsberrow (the two first being in Worcestershire, the last in Gloucestershire) I have it upon record that "the standing wage in the district varies from 9s. to 10s. a-week, exclusive of cider, which is reckoned as worth another shilling. One gentleman present, who pays only 9s., allows his men to buy their flour of him at a rate never exceeding 10s. a bushel." The men's advantage in such an arrangement would, of course, depend upon the quality of the flour.

At a meeting held at Linton, for the parishes of Linton and Aston Byham (both in Herefordshire), I have it again upon record:—"Wages at present are in most cases 10s.," implying that in some cases they were less. I am certain that it was not intended that in the other cases they were more.

At the Newent meeting, at which I am supposed to have "retracted," held for the parishes of Newent, Oxenhall, and Pauntley (all in Gloucestershire), I have it once more upon record that, "the more general rate of wages of an able-bodied man at the present moment (Jan. 27th)

is 10s. a-week, though there are cases in which men are receiving 9s.;" and one farmer present admitted that 9s. was his rate, and did not add, as did the gentleman at Redmarley, that he gave his men any special advantages in the purchase of their flour.

I stake my character for truthfulness upon the accuracy of these statements; so far, at least, as this, that they are reported exactly as they were received; and they were received from the farmers themselves, who certainly could have had no motive in representing the wages they are paying to their labourers as being lower than they are.

I admit that the ground is delicate; but it is not ground of my making. I find it, and I have to deal with it in attempting to suggest any practical solution of this *veratissima questio* of education. And though I was told pretty plainly yesterday that I had introduced an element of disturbance and unpleasantness into the dis-

cussion, by touching upon what I ought to have considered a forbidden topic; yet, as I have survived the numerous kicks that I received—kicks given, I confess, with perfect fairness and thorough good temper—I shall not regret having called the attention of the farmers of England to the fact that the rate of wages is one main element in the social condition of the agricultural labourer, and that where that rate is unduly low, that condition, in all its aspects, is proportionately depressed. I quite admit that people must be fed before they are educated: I require it to be admitted also that they must be fed before they can work; and that to be adequately fed, they must be adequately paid.

I remain, sir, your obedient servant,

JAMES FRASER,
Assistant Commissioner.

2, Victoria-street, Westminster, March 4.

POTATO PLANTING.

It may be presumptuous to adopt the above heading; but as the farming public have had before them for some time Mr. Maw's Prize Essay, containing "Results of Experiments on the Potato Crop," I want to disabuse potato growers of its real value as a guide to their operations. I regret to say that I depended upon newspaper reports of the essay, and have only just now read it in the Society's Journal. To my mind it proves comparatively nothing. The experiments are principally carried out with the Fluke or other Kidney potatoes, the late Red being the exception. We have no description of the soil upon which they were grown; nor of the state of the soil, the weather, or the seasons. As a very old potato-grower, I know from experience that the growth of the Fluke potato and other Kidney varieties, is quite exceptional. We never cut them in dry weather; we never plant them at like widths with other varieties; their scant haulm will allow very close planting. Wide planting, *i.e.*, eighteen inches, is sure to diminish the yield greatly. Dry seasons, or dry soils, are highly detrimental to their growth, and certain destruction to the cut ones, and nearly so to the small ones. Wrong premises can never lead to right conclusions. "The Experiment on the Potato crop" is by no means conclusive as to the growth or culture of the *Potato Crop*, speaking generally, but only confirms the fact known to most cultivators of Kidney varieties, that they must be planted more closely than the more prolific kinds. The Late Red appears to be one of these prolific varieties, and in the experiments far outstrips the other sorts. The popular Regents, the prolific Rocks, Snowballs, Red Regents, Dunbar Regents, Poor-man's Profits, Skerry Blues, and other best and prolific kinds, are out of the experiments altogether. It would be superfluous to write upon potato culture year after year, unless to correct errors that may be propagated, or to diffuse further useful information that may be discovered or be forthcoming. Mr. Maw states that his 8 oz. sets, at 12 inches by 3 feet, will give, per acre, as follows: Late Red, 38 tons 19 cwt. 2 qrs. 25 lbs.; Spencer's King of Flukes, 34 tons 2 qrs. 14 lbs.; Queen of Flukes, 30 tons 5 cwt. 2 qrs. 9 lbs.; Flukes, 21 tons 9 cwt. 3 qrs. 19 lbs.; and the 6 oz. sets, about 2 tons per acre less; and of 1 oz., 2 oz., and 4 oz. sets, about the average of 10 tons less than the 8 oz. sets—products almost beyond belief: fancy, 39 tons per acre, at £8 per ton—£312! incredible! Well, if it is to be done, let us try and do it. In my paper of last year I find it stated that "the distance from set to set should vary according

to the variety of the potato: Flukes from ten to twelve inches apart, Regents from twelve to fourteen inches, Rocks from fourteen to sixteen inches; all others in similar proportion. The less growth of haulm the less space apart, and *vice-versa*." "The sets, too, should be of good size, and not abounding with eyes." This is usual in the district from whence I write; but our products are more like 9 tons, including seed and chata, than 39 tons. We can report several experiments with ordinary manures, applied last year: in two of them the proof was that a fertile soil, well manured with fold-yard dung, was not benefited by the artificial aids applied, *i.e.*, that about 4 cwt. of mixed guano and superphosphate per acre failed to do good. The crop of potatoes was quite equal where the artificial aids were omitted. Another experiment consisted in the application of 12 loads of good dung per acre *versus* 3 cwt. guano and 1½ cwt. superphosphate mixed: the latter application produced the best crop. This was extended over thirty-five acres, half-manured; the other half with the artificial manures just named. Other like experiments or courses of manuring proved that upon fair loams, under good tillage, the potato crop was not perceptibly improved by liberal applications, either of guano, superphosphate, blood, or other manures. I could multiply many such instances, which leads me to the conclusion that upon a fertile soil, well-prepared, the potato crop is not benefited by adding artificial aids to a liberal dressing of fold-yard dung. It tends to increase the haulm, endangers the tubers to the potato disease, injures their quality, and does not improve the yield. It appears to me that the potato plant will only appropriate beneficially a given amount of nutritive matter or food. Too little manurial aid will not produce enough fermentation in the soil to promote its full development; too much will act like an overdose. It is also within the bounds of probability that too heavy dressings—*i.e.*, of fold-yard and artificial manures—may in a degree neutralize each other. It requires good judgment to regulate the management of the potato crop to make it most advantageous and profitable. We want good crops of fine "ware"—not a large bulk of coarse and scabby quality. Too strong a dressing upon a good and rich soil will often produce a coarse and almost unsaleable sample and much diseased. The best samples and most profitable crops are produced from mild loams, under good culture and liberal manurings. On such soils I should recommend a dressing upon ridges of 7 loads of fold-yard dung, 3 cwt. of Peruvian guano, and 1½ cwt. of superphosphate or like

manure per acre, mixed, and sown along the ridge immediately before planting. On good fertile soils I should recommend a dressing of 12 loads of fold-yard manure, without artificial aids, or 8 cwt. of Peruvian guano and 2 or 3 cwt. of superphosphate, or like aids, without fold-yard dung; the fold-yard manure to be put in ridges, the artificial manure either in the ridges or sown down every third furrow as may be preferred. It will be desirable to increase both these liberal applications if the soil is inferior or in a low condition. On strong loams or loamy clays both may be increased with advantage. The farmer himself must be the best judge as to the requirements of the soil: the above are sufficient dressings as a general rule.

The land intended for a potato crop must be in good tilth, admitting no exception. I think, taking the average of seasons into account, the best method of planting for considerable breadths is upon the ridge system; the manurings are thus nicely covered, and the sets are put in at a safe depth without a heavy covering, but so as to exclude both frost and drought. The ridges for flukes or light hauled varieties should not exceed 25 inches in width, and the sets should be planted about 10 inches apart. To be whole sets of good size, 2 oz. to 4 oz., any larger sets (tubers) may be cut if the weather is showery and soil damp. For regents and like sorts the

ridges may be 27 inches wide and the sets planted 12 inches apart; these to be from 2 oz. to 4 oz. tubers (uncut): any larger ones may be cut to form two sets. For rocks, skerry blues, prolific reds—i. e. "red regents"—and all heavy hauled kinds, the ridges may be 30 inches wide and the sets planted at 14-inch intervals. These being free-growing varieties it is not absolutely requisite to plant such large and good sets, nevertheless the better sets the better crop—and wisdom teaches the latter. The foldyard manure should be evenly spread along the bottom of each ridge, the sowing of the artificial manure upon it, and the planting of the sets immediately after these dressings; the plough closing all up in its regular rounds—opening one ridge up and closing another down, so that all is done simultaneously and expeditiously. If the season is a dry one the ridges must be lightly rolled down. If foldyard manure is not used, ridging may be dispensed with and the artificial manures may be as beneficially sown along every second or third furrow "on the flat"—the planting as above. The time for planting will mainly depend upon the season, and the preparedness of the soil or land to be planted. As a general rule it is wise to await the approach of warm weather; the tubers will not grow till the soil derives warmth: from the middle of March to the end of April is the usual and the safest time.

A REVIEW OF THE PROGRESS OF AGRICULTURAL CHEMISTRY.

[TRANSLATED FROM THE FRENCH.]

Introduction.—A few words on a voyage down the Rhine—Vitality of agricultural institutions of Germany—Agricultural stations—Agricultural schools—On the necessity of establishing superior agricultural instruction in France—Insufficiency of our agricultural societies—Union of science with practice—What shall be my contribution to the Journal of Practical Agriculture?—Experimental fields—How we understand their organisation—Programme of this review—Chemistry and vegetable physiology—Chemistry and animal physiology—On agricultural education—Reforms indispensable.

I now resume, in order to continue it regularly from this time, the review of works on agricultural chemistry published in France and abroad. Thinking justly, I believe, that it concerns the enlightened public, to whom the "Journal of Practical Agriculture" is addressed, to be kept informed of the progress of the physiology and chemistry treated on in their relation with agricultural science, the skilful editor-in-chief of that work had requested me last year to send a periodical account to our readers, of the progress of agricultural chemistry. This task I have accepted with pleasure, being convinced of the services, daily increasing, rendered by science to practice. Unforeseen circumstances have prevented me for many months from drawing up the programme which I had traced for myself, and have been obliged to suspend, almost at the outset, my regular contribution to the "Journal of Practical Agriculture." In now resuming, no more to be interrupted in future, these conversations on agricultural chemistry, I propose to point out precisely afresh their true character, their object, and the manner in which I intend to analyze and, where necessary, comment upon the researches of chemistry and physiology in application to agriculture.

The works that for many months have kept me at a distance from the readers of this Journal ought not to be without its influence on the minds of those who preside at this review, and I think it useful to say a few words on it.

Through the kind introduction of M. Monny de Mornay, the minister of agriculture, commerce, and public works, has commissioned me to inspect on the spot the organisation of the agricultural stations of Germany, and to send him a report of the working of those institutions, the services it performs amongst our neighbours, and of the interest it would excite for agriculture in France, by inaugurating in that country the creation of similar establishments. I have availed myself of the facilities thus offered to me, seconded as they were by the warm reception I have met with in the different regions of Germany which I visited, to make myself exactly acquainted with the state of agricultural chemistry and the organisation of the agricultural instruction in that country. I have even visited several important farms, at the head of which is the magnificent Domaine of Salzmünde belonging to Counsellor Bolze; in a word, I have neglected no opportunity of acquiring by personal inspection (*de visu*) a knowledge of the state of the various branches of the agricultural art in the lower Rhine, and have returned to France with an ample harvest of documents, both printed and manuscript, the publication of which will, I hope, engage the attention of our farmers.

Setting out for Germany with the thought that there was much to do to impress on French agriculture, by the instruction and with the aid of chemistry, an impulse productive of valuable results, I have had my convictions on the subject strengthened at every step I have taken; and I have returned to France astonished (this is no exaggeration) at the vitality of the agricultural institutions of Germany. There the agricultural societies and schools and stations are flourishing; almost all of them are well organised and endowed with incomes and grants which allow them to provide largely for their requirements. In short, I will confess, that on seeing these perennial institutions so effectually patronised both by private individuals and by the State, I could not help making a

melancholy comparison with that which exists with us, or rather the absence of analogous institutions in our country.

Is it not, indeed, painful to think, and almost humiliating to acknowledge, that a great nation like France does not possess one single establishment of high education comparable to those that are found in Prussia, Wurtemberg, Bavaria, or Saxony? I am aware that the formation of an agricultural institute is under the special consideration of the Minister of Agriculture, and we hope we shall soon see the disappearance of this cause of the inferiority of French agriculture.

Nor was I less painfully impressed on visiting the laboratories and agricultural experimental fields of Germany. Everywhere life and labour without noise, but active and productive; trials of all kinds of artificial and natural manures, meetings of practical and learned men, at which are periodically discussed questions in the order of the day, of which we know nothing or next to nothing, in France. Our agricultural societies languish, in spite of the efforts of some of their members; our agricultural committees confine their operations almost exclusively to the distribution of prizes and medals. There is nothing in that of a nature to stamp upon our agriculture a really fruitful impulse; the isolated efforts of a few learned men and a few practitioners cannot improve the situation. It is necessary before all, that the mass of the agriculturists shall be convinced, by facts, of the extreme importance—now more than ever—of cementing the union of science and practice; it is necessary, at any price, to instil into the habits of our farmers the *art of experimenting*. In a word, it is from henceforth indispensable that agriculture, existing hitherto almost exclusively in our country as a science of pure observation, should become at the same time an experimental science. By this means, and this only, shall we arrive at better returns, more largely remunerative, and which will more than compensate for the increase of labour imposed upon the cultivator on entering on this course.

If the foregoing reflections are just—if we are not under illusions in endeavouring to impress them on French agriculture—the deductions arising from the principles above laid down are easy to draw. It is necessary, on the one hand, to make the practitioners acquainted with the results of the agricultural researches undertaken in the laboratories and experimental fields; and, on the other, it is of importance, as was stated lately by M. Lecouteux, to at once set on foot the creation of the largest possible number of experimental fields in the rural districts.

The task adopted by the "Journal of Practical Agriculture" is thus clearly indicated in what concerns this important question. By its "Review of Chemical Agriculture" it will make its readers acquainted with all the scientific works that have treated on vegetable and animal physiology, on the constitution and improvement of soils, on the study of manures, forages, &c. In stimulating, on the other hand, the creation of numerous trial-fields—in giving on this subject, as we shall do very soon, the necessary instruction for their establishment, the direction, and the crops of those fields—by publishing afterwards and discussing the results obtained by the experimenters, we hope to confer a real service to French agriculture.

After having thus precisely stated my share of contribution to the "Journal of Practical Agriculture," it remains for me, before entering upon the design, to point out summarily, in order to avoid returning to it again, the programme I have adopted, and the spirit in which I shall enter upon certain subjects, and particularly the question of chemical manures, one of the most important of those we shall have to examine. Persuaded, as I have already stated, of the absolute necessity that now exists in the interests of agriculture of engaging in the scientific

course, proceeding experimentally, abandoning the track of routine in order to substitute for it the teachings of rational experimentation, I shall endeavour not to pass over in this review any important fact, and to put in the foreground results properly stated, from whatever quarter they may come to us, without any regard to the question of persons. If there is a subject from which should be banished all impassioned discussion, is it not, in fact, the scientific one? In such a matter one thing alone is of importance—the fact. Is it well or ill reported? What degree of credit ought we to accord it? This is everything. The critic ought, before all, to strive to be just, to render to each what is his due, and to appreciate the facts under his examination, without seeking, in the scandal produced by personal attacks, a means of awakening the attention of his reader.

What I say here on the subject of the "Review of Agricultural Chemistry," the editors of the Journal design equally to apply to the experimental fields and the discussions of the results to which they may conduct. Our task will consist in publishing the trials made both in France and in foreign countries to stimulate new experiments as numerous as possible, to register the results obtained; in one word, as M. Lecouteux has well remarked, it is a vast experimental inquiry we wish to set on foot, by making an appeal to the goodwill of the farmers, by laying aside all personal questions, and without making ourselves responsible in any way for the value of such or such improvements before the facts have spoken. Free from all engagements, exempt from all preconceived ideas, we shall with warmth, but without passion, enter upon the examination of the problem of chemical manures; we shall guide, in the best manner we can, the farmers who express a desire of associating themselves with our plan of establishing trial-grounds, leaving to experience alone the task of pronouncing upon the efficacy of the manures which are becoming the powerful auxiliaries of farmyard dung, but not of the minerals—till it is proved to the contrary—brought forward as a substitute.

I now come to the plan that I propose to follow in this review. The questions on chemistry and physiology which are of immediate interest to the farmer are numerous, and for greater clearness I shall group them under different heads, of which the following is an enumeration; and in the consideration of these matters we shall first establish two grand divisions: Vegetable chemistry and physiology, and animal chemistry and physiology.

A. VEGETABLE CHEMISTRY AND PHYSIOLOGY.

The plant grows by the aid of the elements supplied to it by the soil properly so called, the water and the atmosphere; all the observations and experiments on vegetables should find a place in one of the following categories, which will constitute the outline of the study of vegetation:

1st. The soil: Formation of the soil; disintegration, of rocks; chemical and physical properties of soil; analysis of soil; faculty of absorption of soil; produce of soils; mineral elements of the nutrition of vegetables, &c.

2nd. Air and water; formation of ammonia and nitric acid in the air; dew; frost; hail; composition of water; drainage; influence of atmospheric agents upon plants; action of light and heat; influence of climate, &c., &c.

3rd. The plant: Composition of vegetables, analyses of ashes; cultivation of plants; germination; assimilation; fructification; reproduction, &c., &c.

4th. Diseases of plants: vegetable parasites; various changes; degeneration, &c., &c.

5th. Manures and means of improvement: Chemical manures; analysis of manures; trials of manures; ex-

experimental fields established in France and abroad; results obtained, &c., &c.

It would be easy for us to show on the subject of chemical manures how far we are behind the farmers of Germany and England, and to prove that many trials considered now in our country have for a long time been in use abroad. The rule that we have marked out above will necessarily restore to each what belongs to it.

B. ANIMAL CHEMISTRY AND PHYSIOLOGY.

These two branches of agricultural science have for some years made immense progress. The great works of Voit, Pettenkofer, Stohmann, Henneberg, Gilbert, and Lawes, &c., too little known in France, have thrown great light upon the alimentation and production of cattle, on the assimilation of food, the formation of fat, &c., and they deserve to occupy an important place in our review. The animal lives and grows at the expense of the plant, and afterwards restores to the soil the matters which its organisation has enabled it to assimilate. We shall place the analyses of the works relating to animal chemistry in the two following divisions:

1st. Nutrition; analyses of forage and other food; preparation and preservation of forage; trials in rearing; relative value of different food and forage; production of cattle considered in relation with the nourishment and exterior conditions under which the animal is placed; production of fat; rearing of sheep, pigs, oxen, and horses.

2nd. Animal products; secretions; meat; chemical composition of animal flesh; modification caused by changes of food; preservation of meat; blood; urine; bile; milk; analyses of these substances.

Such is, upon the whole, the outline, vast as you see it, embraced in chemistry applied to agriculture considered in its two extreme divisions—the plant and the animal. To enumerate the various subjects that will attract our attention is, I think, to draw out from it all its importance to practical agriculture. It is taken for granted that we shall not embrace in each of our reviews the field of study of which we have given the limits, but we have thought it proper to specify clearly from the first the subjects that will form the object of our conversations, in order to indicate beforehand, to those who would closely follow us in this study, the nature of the subjects we have proposed to treat, and the aspect under which we shall consider them.

Everybody in France agrees in acknowledging that agriculture is under difficulties, and they ascribe this to the most opposite causes. They denounce in turn the treaty of commerce, the increase of wages, the depopulation of rural districts, the state of the public roads, &c., &c.; far be it from us to deny the injurious influence of these various causes, but it is impossible for us not to attribute a great part of the evils pointed out by each to the state of superiority of our agricultural institutions compared with those that flourish amongst the nations around us. There exists in France no superior agricultural education properly speaking, or at least the schools we possess are insufficient. Our agricultural societies languish, and have not all the proportion of influence which certainly would belong to them if they were better organised and more active. It is necessary, at all hazards, to come out of the path that we have gone in, that each one brings his stone to the edifice, and that the State, the communes, and the individuals should be convinced of the necessity of a re-organisation of our agricultural institutions. The first thing to do is to establish superior agricultural education, to found a sort of agricultural university, richly endowed, to provide laboratories well furnished, and with professors chosen from amongst the heads of the contemporary societies. It is not at Versailles nor Grignon

that this great school should be placed, but at Paris, the intellectual centre of France. It is an error to urge, in order to have it far from the capital, the annexing to such an establishment a farm of a hundred hectares; an experimental field, or even a simple garden would be sufficient. This school ought to have for its mission, not to form practical agriculturists, but to prepare by deep scientific study a nursery of young savans, chemists, physiologists, &c., who by their advice, their labours, and their writings, would disseminate in future in every part of the country the true nature of agricultural science!

It is necessary in the second place that the agricultural societies should organise, with the consent of the Department, or the State if their own funds are insufficient, centres of study and experiment, analogous to the agricultural stations of Germany. A better organisation of the school-farms will follow, which will provide for agriculture good foremen, good labourers, agricultural manufactures, and better informed farmers.

If we desire to raise agriculture, it is indispensable to begin by marking its place in our high instruction; we must engage boldly in the work of reforms, impart life to the agricultural centres of the provinces, and encourage scientific works that have for their object agricultural production. This is the future of agriculture; and to those who would tax us with exaggeration, we would say, "Pass the Rhine, go to La Manche, examine agriculture in Germany and England, visit Rothamsted, Hohenheim, Proseau, Gottingen, Tharaud, and you will return convinced, like myself, of the necessity of acting, and of doing so promptly in the way that we have pointed out. These are vital questions, and it is necessary from this time to discuss them freely, to acknowledge when we are deficient, and to endeavour quickly to amend.

We shall have many occasions of returning to this subject, and shall do so without fear of being charged with repetitions, because our conviction in this respects is founded on indisputable facts.

L. GRANDEAU,

Doctor of Sciences and Medicine.

[The Journal has already stated the impossibility of putting in the foreground both high scientific and practical instruction. The latter can only come after the other, and it ought to be acquired by degrees in the best forms. The agricultural institute required is not called upon to form learned professors only, but men who will be qualified to manage large rural works. It must not be forgotten at the same time that there are in France three regional schools, namely, Grignon, Grandjonan, and La Sausaie, the organisation of which meets specially the wants of an intermediate class between those pupils who ought to form the agricultural institute and those of the school-farms.—THE EDITOR.]

WHAT RABBITS COST THE FARMERS.—At a recent meeting of the Staindrop Farmers' Club a paper was read on the comparative appetites of sheep and rabbits. Two hogget sheep and twelve full-grown rabbits had been put up, and fed for six weeks on oats, cut clover, and bran. At the end of that time it was found that nine rabbits in captivity ate as much as two sheep, and, of course, when free, they destroy much more than they consume. Some estimate may thus be formed of the injury done to tenant-farmers by rabbits. A farm on which 900 rabbits are shot yearly is taxed far more heavily than if its tenant had to maintain a flock of 200 of his landlord's sheep. The sheep, too, would be useful in fertilizing the land, whilst rabbits are of no use at all in that capacity.

A FARM IN CAYUGA COUNTY, AMERICA.

Back from Cayuga Lake the soil assumes a light character, with some local exceptions, although still what would be called a strong loam. The following example of successful management belongs to this portion of the county.

The farm of Joseph B. Coon, in the town of Aurelius, is two miles southward from the city of Auburn, and contains one hundred and seventy-seven acres of land. It has been under-drained, partly with tile and partly with stone—not generally with parallel drains; but through the wetter portions with such branches as have been found necessary. The owner has not kept a record of the number of miles of these ditches—he said he would be willing to pay fifty dollars if he knew the amount—a hint to those who are about to engage in, or who are now conducting draining operations, to keep an accurate record with measured charts of the fields. The soil is mostly a good medium loam, but a smaller portion is heavier clay. The owner estimates the whole farm as worth 150 dols. per acre, and has been offered nearly this sum.

The profits of this farm are chiefly derived from the crops, the number of animals kept not being large. The order of rotation is corn, barley, wheat, and clover three years—the raising of clover seed being one of the most profitable parts. Hitherto the manure has been spread on the grass in autumn; the earlier the better; to be ploughed in for corn the following spring. This mode has been found here, as well as in all other places where we have known it tried, eminently successful, and to bring uniformly heavy crops. The variety planted is the eight-rowed yellow. The product during the past season of extraordinary drought was only eighty to ninety bushels of ears to the acre, or about forty-five bushels of shelled corn. The largest crop that has been raised was an average of one hundred and fifty-five bushels of ears per acre, over a seventeen-acre field—some of the acres yielding as much as ninety shelled bushels. This large product shows the value of autumn manuring, as well as the excellent character and condition of the land. The crop is planted in hills, in rows both ways, after the usual manner. There is no question, however, that if the method of planting in drills or in hills thick in the row, were employed, that the eighty bushels frequently obtained would have been more than a hundred—judging from our own experiments and those of others. It may be well here to remark, that in ploughing the fields for different crops, no dead furrows are ever made, the ploughing being performed around the whole field, throwing the earth out from the centre, reversing the process next time, and throwing it towards the centre. To effect this object well, the field must be drained so as to be uniformly dry enough for the whole to be ploughed together.

Barley follows the corn, and wheat succeeds the barley. The latter is not so successful nor profitable as the corn crop, the average yield being about twenty bushels per acre. The seed is sown with a drill, like that of all other farmers in this region, at the rate of a bushel and three pecks per acre, and at a depth of two and a-half inches. The Wicks wheat succeeds better than any other sort that has been tried, the old Mediterranean being entirely discarded, on account of its weaker straw, greater liability to lodge, and inferiority of grain. This superiority of the Wicks wheat, the owner, however, stated did not exist in all places. In fact he regards it as a local variety adapted to particular soils. He finds the two sorts to ripen about the same period. There is no doubt that the practice of top-dressing the land with manure after the ploughing is completed for sowing the wheat, and before the land is harrowed, would have materially increased the wheat crop, as well as contributed to a better growth of the succeeding crop of clover while small. A change, indeed, has just been adopted by the owner, as he finds the manure applied to the corn too nearly exhausted or dissipated to be of much benefit to the grass three or four years afterwards, and a part or all of the manure is to be hereafter applied to the wheat ground. The practice of harrowing the wheat as early in spring as the surface is dry enough, was adopted last spring with a marked improvement; the harrow, being rather coarse and heavy, appeared to treat the young plants very roughly, but no harm was done.

Timothy and clover follow the wheat—the former at the rate of only three or four quarts per acre, sown as usual with the wheat in autumn, and the latter at the rate of one peck per acre the following spring. After the grain is cut, the grass crop is allowed to grow through the autumn with but little or no feeding—forming a good winter mulch. A proof of the value of this winter covering was shown a few years since, when the clover, although a heavy crop in autumn, or large enough to cut one ton per acre, was allowed to remain on the ground. The following season being extremely dry, the meadows on the adjacent farms yielded a very meagre crop of hay, while this gave a heavy product. The next year, after the harvesting of the grain, a good crop of clover hay is cut about the first of July, averaging a ton and a-half per acre. The second crop is cut in the autumn for seed. The work is done with a mowing machine, and when practicable it is drawn into the barn without becoming wet, affording, when this is the case, a good clover hay. The seed is separated by means of itinerant clover mills, the owners of which charge one dollar per bushel at the present time, formerly only fifty cents. The product is from two to four bushels per acre—three is a full average. Is very favourable seasons the yield has been as high as five bushels per acre. The same process, namely, mowing the first crop for hay, and the second for seed, is continued the next year, and frequently the third. It is a common opinion that clover seed exhausts severely the strength of the land—as opinion held by some of the best farmers in the country. As clover belongs to the same natural order as peas and beans, why should it exhaust more than these? The proprietor of this farm although frequently taking three crops of seed in succession, as already stated, says that he does not find the land to deteriorate under this treatment, but that it has continued to grow better. The comparatively small amount of labour for securing clover seed, after a good cut of hay has been taken from the same land, renders it in the opinion of the owner the best crop that he raises. The third year the clover ground is manured in autumn, to be planted with corn the following spring, and the rotation repeated as before stated.

The land submitted to this rotation is mostly kept clear of cattle and other animals, separate portions of the farm being devoted to pasture. About a dozen cattle are kept upon the place—twice or thrice this number would be preferred for wintering for their manure, if the summer feed were sufficient. Two good teams do nearly all the work of tillage, one of them being a powerful pair of mules. These the owner thinks more profitable than horses, and where more than one team is required on a farm, there should be at least one of mules. No sheep are fed on the place, as the land is regarded too valuable, being suited as they are to cheaper and more hilly districts.

Buckwheat is raised partly for the purpose of exterminating quack grass. This tenacious weed is eradicated successfully by the following treatment:—Plough well, but not very deep, early in spring; keep the ground mellow by means of the horse cultivator and harrow, till about the first of July, and then sow buckwheat—a half bushel per acre is enough. Repeat this process the second and third year, by which time the quack grass will be entirely rooted out, if the work has been well performed. The whole may be accomplished in a single season by ploughing, cultivating, and harrowing, if unremittently pursued, say once a week, so as not to allow the growing plants to peep above the surface.

For pitching hay, Raymond's double clutch elevator has been successfully used, in connection with Hicks' car and railway, running just under the peak of the long barn, and dropping the hay at any desirable point throughout the entire length, by the continued motion of the horse which raises it. It has been found to work with great ease and expedition, and faster than horse-forks used in the common manner.

In concluding these sketches of Cayuga county farming, a few suggestions present themselves relative to improvements which might be made in some points of farm management. The importance of underdraining is well understood as the basis of success, and thousands of miles have been already laid

in this region. A larger use of clover, as an enricher and loosener, would be better on many farms. A heavier seeding would also be an improvement, measured experiment showing that the increased product more than repays the cost of additional seed, while the growth is finer and less rigid and woody. Many good farmers sow a peck per acre, and unless the surface soil is in fine condition, so as to produce free germination and growth, a larger amount would not be too much. Top-dressing wheat fields with manure at the time of sowing greatly assists the young clover, and also increases the amount of wheat. Cultivators variously estimate this increased amount from five to ten bushels per acre. One said that he thought it doubled the wheat crop. It is, however, objected to, where the land is already quite rich, as producing too much straw. Some means should be devised for obviating this objection, both on account of the young clover, and the protection afforded against winter-killing. Probably those new varieties of wheat, known as the Wicks and Treadwell, would be less objectionable than the old Mediterranean. The corn crop might be increased in three ways—by more frequently passing the cultivator, by drill-planting, and by autumn-manuring. A good manager informed us that by cultivating his field once a week as long as the crop would admit, thus keeping the crust broken and the soil clean and perfectly mellow at all times, he had largely added to the product. By drill-planting the average increase is about twenty-five per cent.; we have found it in some cases to be much larger. The large products which we have mentioned—such, for example, as those from the fields of David Anthony and Joseph Coon—might in this way be easily run up to one hundred bushels per acre. John Johnston, of Geneva, finds this increase sufficient to overbalance largely the slight additional labour in hoeing, while the fodder is nearly doubled. Applying manure to grass in autumn, to plough under for corn the following spring, doubles the value of the manure, and increases the crop largely.

The examples we have given of course far exceed the average obtained by farmers; but it is obvious that by a fair use of the best means, a large revenue may be obtained from the land—more particularly by underdraining, turning in clover, saving and applying manure, and careful and energetic management

generally. Take the following estimate, founded on the usual five-year course:—

20 acres corn, 70 bushels per acre, 1,400 bushels	Dols. 1,400
20 do. barley, 30 do. do. 600 do.	: 600
20 do. wheat, 25 do. do. 500 do.	: 1,250
20 do. meadow, 2 tons do. 40 tons.	: 450
20 do. pasture, worth	: 300

4,000

Taxes, labour, and expenses 2,000

Profit, as revenue from land 2,000

which is equal to 7 per cent. on 285 dols. per acre.

On 200 acres, well managed, with a full supply of machinery, and worked with a suitable division of labour, the following estimate would be a fair one:—

200 acres	8,000
Labour, taxes, &c.	3,000
	5,000

The amounts of the crops in the above estimate are less than the average actually obtained by some of the best farmers; the prices, always varying, are lower than frequently exist, and with a combination of all the advantages and points of good management which we have just enumerated, would often be exceeded. Much will of course depend on THE MAN and the management. The net profits in this estimate are not greater than those which have been reached by some of the farmers we have named in this article, and they show conclusively that wealth may be accumulated by good farming as well as by other business. A surplus of five hundred dollars a year, laid up and continually placed on interest, would amount in forty years—that is, in a life from twenty-five to sixty-five years—to no less than a hundred thousand dollars, or two hundred thousand for an annual appropriation of one thousand dollars and accumulated interest. It must be admitted, however, that very few succeed in obtaining the profits which we have estimated. An object of these notices and estimates is to stimulate the great mass to a higher degree of improvement and profit.—*Albany Cultivator.*

FARMING CUSTOMS OF STAFFORDSHIRE.

A meeting of the members of the Staffordshire Chamber of Agriculture was recently held at Lichfield, Mr. R. H. Masfen in the chair, for the purpose of discussing the questions of the abolition of turnpikes, and the agricultural customs and covenants of Staffordshire. Several agents for large estates and farmers from various parts of the county were present.

In introducing the question of Farming Customs and Covenants of Staffordshire, Mr. MAY, of Elford, said that his attention had been called to it by reading an article in the *Mark Lane Express*, referring to an Essay of Messrs. Cadle and Babb of Gloucester. It appeared that these gentlemen were the fortunate writers of a prize essay for the Royal Agricultural Journal, on the "Farming Customs and Covenants of the different counties of England." The Council of the Royal Agricultural Society being anxious to give the outline of a general lease, advised their editor, Mr. Frere, to request Messrs. Cadle and Babb to communicate with the different Chambers of Agriculture, asking for further information. It was thought by the Royal Agricultural Society that the essay, if thus perfected, would be highly valuable and interesting to all connected with agriculture, in its practical or legal bearings. Mr. May said that, thinking the account of Staffordshire very meagre and lacking some important items, he ventured to submit to the meeting an improved statement. The reading of this caused a good deal of discussion; the gentlemen from the north and east of the county objecting to some of the customs which were stated to be in use in the south of the county. Ultimately the amended statement was disapproved of, and Mr. May was requested to write out a fair

copy, and to forward it to Mr. Masfen, the vice-chairman of the Chamber, for his approval, and with a request that he would immediately forward it to Mr. Frere, asking him to insert it in the next number of his Journal. The following is a copy of the amended statement:—"The farms are usually let on annual agreement, the entry being at Lady-day. A twelve months' notice to quit is being introduced. The incoming tenant pays for all necessary acts of husbandry done on the farm; for the young seeds, if not stocked after the 1st of November; for a proper proportion of the unconsumed hay and straw, the growth of the previous year, if properly ricked and thatched—two-thirds of the market value of the hay, and one-third of the market value of the straw. Allowance is made for lime and raw bones extending over three years; and on many of the largest estates, under recent agreements, purchased manures applied to roots and grass consumed on the farm, and for part of the purchased corn and cake, if consumed by sheep and cattle, are allowed for. Draining is usually done by the tenant, the landlord finding pipes. An allowance is made for this, extending over four years; but if the tenant pay for the whole, seven years are allowed. Repairs of buildings, gates, fences, &c., done by tenant, landlord finding materials in the rough. The outgoing tenant takes an away-going crop of wheat, the breadth sown being in proper proportion to the rotation adopted, usually two-thirds after a dead fallow, and one-half after a ley or brush crop, less the reaping and weeding. Game usually reserved by landlord, and on the best-managed estates tenants are allowed to kill rabbits from November to April."

FARMING CUSTOMS AND COVENANTS.

"The Customs and Covenants of England," as issued under the auspices of the Royal Agricultural Society, would promise to become a paper of some value. Still, the chief weight of such an article must depend upon its continuation or adaptation to the present time. Mr. Pusey's Committee of 1848 so thoroughly exhausted the subject, with the most competent witnesses called from each district, that it would be idle to attempt to cope with this inquiry in its entirety. The prize essayists, however, are to be commended for the step they have taken in inviting the several counties to revise their reports; although, so far, but few such examinations would appear to have been entered on. Even in Gloucestershire, when under the immediate influence of the authors, the discussion was but partial and imperfect, and Staffordshire stands almost alone in setting an example that it would be well to follow elsewhere. Here, Mr. May, a well-known agriculturist, considering Messrs. Cadle and Bubb's account "very meagre and lacking some important items," set himself to work to prepare an improved statement, which in turn he submitted to the criticism of his brother-farmers. A debate ensued over this, and certain objections were raised, the amended report being further amended until considered fit for publication in the Royal Society's *Journal*. It may be useful to compare the customs of 1868 with those spoken to just twenty years since, although, as might be expected, there has been no very material alteration in the interim. The farms are still let on annual agreement, with entry at Lady-day; the incoming tenant pays for certain acts of husbandry, for the grass-seeds, and, according to Mr. May, for a proper proportion of the unconsumed hay and straw, whereas Mr. Chawner says for the hay and straw that may be on the farm at the time. Draining continues to be done by the occupier, the landlord finding the pipes; and the outgoing tenant still claims about the same share of the wheat crop—two-thirds after a naked fallow, and half of what is termed a brush crop, or one taken after clover, roots, or green crops of any description. Any material difference in the two statements is especially encouraging, and here it is that the twin-essayists should surely make their strong-hold. "Have you," Mr. Chawner was asked in the spring of 1848 "any compensation for the use of artificial food or artificial manure, or drainage, in Staffordshire? No, the tenants fall back upon the custom of the district; and those customs probably were fixed when nothing was known of artificial food or artificial manure. Is there any custom to allow compensation to the tenant for marling? No, I never heard of it. Is there any custom to allow compensation to a tenant for the application of artificial manure of any description? None whatever. Is there any other custom as between incoming and outgoing tenant, than the one to which you have referred; namely, the compensation for seeds, and for straw and hay? No, I cannot remember any other. Has this custom to which you speak prevailed for as long a period as you can recollect? Yes, there has been no change in the custom that I know of." In 1848, there were thus no allowances, or as the witness puts it in another place, no custom that afforded the tenants sufficient protection to induce them to farm so highly as they would otherwise do. Whereas now we hear that allowance is made for lime and raw bones extending over three years, and on

many large estates, under recent agreements, purchased manures applied to roots and grass consumed on the farm, and for part of the purchased corn and cake and so forth.

It is only fair to Mr. Chawner to say, that when before the Committee, he recommended that artificial manures, and artificial food should be paid for *pro rata*, "without consulting the landlord; but there is one little item in the essay of Messrs. Cadell and Bubb, as revised by Mr. May, and then approved by Mr. Masfen, that we fear had but little consideration twenty years since:—"On the best managed estates tenants are allowed to kill rabbits from November to April." There could be scarcely anything more politic than that the compilers of the Customs and Covenants as set forth in 1868, should compare these with the evidence of 1848. We might trace the progress of agriculture by such a means, as showing where the allowances have been extended, and the rabbits have been diminished.

Curiously enough, the customs of Staffordshire came under consideration at the Lent Assizes only last month, where an action was tried between landlord and tenant that smacks more of a raid in some new country than the usages of Old England. According to the opening—and the verdict was for the plaintiff—in the year 1866 the defendant applied to Mr. Tongue to let to him two small pieces of pasture-land for grazing horses. Mr. Tongue consented to let the land on the express stipulation that it should not be broken up into arable-land, but used as pasture-land only. In September, 1866, Mr. Long, for the plaintiff, gave the defendant notice to quit at Lady-day, 1867, and almost immediately afterwards the land was put up for sale by auction. The defendant was present, and heard the land described as meadow-land. The land was not sold; and after the auction Mr. Aston, the defendant, applied for an extension of the term of his tenancy; but this Mr. Long declined to grant. Immediately afterwards, in defiance of an express stipulation to the contrary, and of remonstrances addressed to him, he ploughed the land and sowed it with wheat. This he did in his own wrong; and, therefore, when he vacated the land at Lady-day, 1867, he had no claim to the wheat. Mr. Tongue took possession, and when the wheat was ripe he engaged reapers to cut and garner it. While they were so engaged the defendant came down with upwards of thirty men, destroyed a portion of the fences, and took away more than one-half of the wheat, threatening at the same time to murder any one who resisted him! The main point of the defence was custom of country. The defendant, who was himself examined, claimed one-half of the crop of wheat, and he took away two loads of wheat accordingly; while he considered that "it was in accordance with the usages of good husbandry and the custom of the country to convert into arable-land fields which had been two years clover-root. For twenty years the land in question had been arable-land." Mr. Lowe, a tenant-farmer, also called for the defence, said: "The defendant had not acted at variance with the custom of the country in ploughing the land. The custom of the country was that the outgoing tenant should have one-half of the crops: but in the case of small holdings and accommodation land, like the present, for which an exceptionally high price was paid, it was the custom of the country for the outgoing tenant to take the whole of the crops." There would have been ample material for consideration here, but for the defendant

having clearly broken his agreement, which would of course over-ride any mere custom, or, as the judge puts it, "The custom of country could not then be allowed to affect the plaintiff's right." The case, however, is altogether one of some interest, as showing a greater disposition to admit the force of Agricultural Custom than is often evinced from the Bench. "If," as his Lordship said, "the jury thought that the land was let with permission to plough and sow it, they would consider whether it was the custom of the country for a tenant for one

year to take one-half of the crops at harvest-time." Under certain conditions we have already called evidence to show that he may, although we doubt whether any such a custom could be properly enforced by right of might and threats of murder. But custom cannot be too clearly defined, and Mr. May, Mr. Masfen, and their fellows have done essential service by the movement they have just made in this direction. It is only to be regretted that the matter has not been taken up more generally.

NEW PROCESS FOR DISSOLVING BONES USED AS A FERTILIZER.

The importance of phosphates, such as common bones, as fertilizers, especially in grain culture, could hardly be extolled, and it would be presuming upon the intelligence of our farmers to say more than to recommend its practical application. There exist however some obstacles which yet prevent waste bones (nearly always cheap and within easy reach) from being generally used. The great distances in the far West, and other inconveniences, render their purchase in powder form expensive, and for grinding them at home or dissolving them in acid there is still less chance.

Professor Ilienohof, in Russia, has however lately discovered a method for dissolving them, which must prove highly economical and suitable in unsettled countries, where, owing to the great abundance of forests, wood ashes are cheaply secured—indeed, are almost always ready at hand. This new process of treating bones consists of mixing them with wood ashes and slaked caustic lime, and keeping the mixture constantly moist. As in the preparation of lye for manufacturing soap, the alkaline carbonates in the ashes, such as carbonate of potassa, are by the action of caustic lime converted into free caustic potassa, attacking and quickly dissolving the bones.

The following practical example will illustrate the necessary proceeding: Suppose the wood ashes to contain about 10 per cent. carbonate of potassa, and that 4,000 lbs. of bones are to be worked up; then we take 4,000 lbs. of ashes, 600 lbs. of caustic lime, and 400 to 500 lbs. of

water. A ditch, some two feet deep, of such width and length as to hold 6,000 lbs. of the mixture, is dug, and near it a second ditch, being some 25 per cent. larger, and both lined with boards. The lime is then slaked, and, when crumbled to a powder, mingled with the wood ashes; and 2,000 lbs. of bones, piled up in layers, and covered up with the mass in the smaller ditch; 3,600 lbs. of water added, and the whole left to itself. From time to time small quantities of water are added, to keep the mass moist. As soon as it is found that the bones are so far decomposed that when pressed between the fingers they are soft and crumble, the second portion—i.e., the other 2,000 lbs. of bones—is brought into the larger ditch, and covered in layers with the first mass, and left to decompose.

After the whole mass has undergone decomposition, it is suffered to dry, by removing it; and, lastly, to facilitate its reduction to powder, mixed with 4,000 lbs. of dry turf, or some other dry vegetable earth. The mixture is repeatedly stirred about with a shovel, and may at once be brought upon the fields. Manure prepared thus will contain about 12 per cent. of tribasic phosphate of lime ($3 \text{ CaO}, \text{H}_2\text{O}_5$), 2 per cent. of nitrogenous matter. This manure must, from its composition, produce an admirable effect upon grape-vines.

Liebig, in generally recommending this new fertilizer, thinks an addition of gypsum an improvement for many kinds of fruits.—*American Agricultural Report.*

SMITHFIELD CLUB.

At a meeting of the Council, held March 3rd, 1868, present the Earl of Hardwicke, president, in the chair; Lord Tredegar, vice-president; Lord Bridport, vice-president; Messrs. Barnett, Torr, Baldwin, Joseph Druce, J. B. Downing, Charles Howard, James Howard, Moore, Leeds, Painter, Rigden, Thurnall, Twitchell, Brandreth Gibbs (honorary secretary).

The minutes of the last Council-meeting were read and confirmed.

Resolved, "That this Council approves the principle of the Metropolitan Foreign Cattle Market Bill introduced by her Majesty's Government, and is of opinion that all fat animals imported should be slaughtered at the port of debarkation, and that live-stock should be subject to such a period of quarantine as would prevent the possibility of the reintroduction of the cattle-plague."

The President was requested to communicate this resolution to the Privy Council, to be forwarded to the Select Committee appointed by the House of Commons.

Messrs. J. S. Turner and Heary Overman were duly elected Stewards of Live-stock.

Messrs. Joseph Druce and Robert Leeds were elected Stewards of Implements.

The prize-sheet for the present year was considered, and the following alterations made:

In place of a class for "long-woolled sheep, not being Leicesters, Cotswolds, Lincoln, or Kentish," it was resolved to substitute the following wording: "Cross-bred long-woolled sheep." N.B.—Notice was given that the classes for cross-bred sheep generally be reconsidered for the year 1869.

The pig classes were rearranged for the present year as follows: "Three divisions for pigs—viz., white breeds, black breeds, other breeds, with the following classes in each of the above divisions:

Class for pigs not exceeding 9 months, first prize £10, second £5.

Class for pigs above 9 months and not exceeding 12 months, first prize £10, second £5.

Class for pigs above 12 months and not exceeding 18 months, first prize £10, second £5.

The silver cup to the best pen in any of the classes, as heretofore; and silver medal to the breeder of the animals winning the first prize in each class.

Resolved, "That in future the live weights of all cattle and each pen of sheep shall be ascertained and made public, and that, if necessary, a weighbridge be purchased;"

The Honorary Secretary was empowered to arrange as to a weighbridge, and to communicate with the Agricultural Hall Company in the matter.

Resolved, "That a luncheon shall take place in the new dining-hall at the Agricultural Hall, on the Tuesday in the show week, immediately after the general meeting of the members on that day"—viz., the Council meeting to be at 10.30 a.m.; the general meeting, 12 noon; luncheon, 2 p.m. punctually.

The Implement Committee was re-elected, the name of Mr. John Head, of the firm of Messrs. Ransomes and Sims, being substituted for that of Mr. W. B. Smith, resigned.

The following were duly elected members of the Club:

J. D. Allen, Pyt House, Tisbury, Wilts.; Geoffrey Howard, Bedford; Colonel Henry Lowther, M.P., Barchthorpe Hall, Oakham; Henry Matthews, Montford, Shrewsbury; Alfred Rogers, Bromham, Bedford; F. Street, Barrowden, Bedford.

ON THE INFLUENCE OF COLD ON INSECTS.

[TRANSLATED FROM THE FRENCH OF THE "COURRIER DES HALLES ET MARCHES"]

Many of the journals have already repeated what is said in all hard winters—that "the frost prepares for agriculture a fertile year, by the destruction of insects, worms, slugs, &c." That frost when it comes in its season, and that snow especially, have a fertilizing influence upon the land no one will attempt to deny; but this beneficial influence of severe winters is in no respect a result of the destruction of insects, which, far from having anything to fear from the cold, have on the contrary rather to congratulate themselves on it, considering that frost is only mortal to their enemies—namely, the birds. Listen rather to the dealers crying everywhere in our streets "Larks! larks!" Snow for the birds is the most terrible and murderous of all nets; when it covers for a length of time the land, not only are they taken by thousands, but they perish by millions. No living being in winter suffers so much as they; and their certain destruction is, for the insects and slugs, a bond of safety. In the meantime, what have these to fear from the cold? Deeply hidden in the ground, those that pass the winter in the larvæ state bury themselves, if necessary, six feet deep to get out of its reach; while others, in the form of eggs or chrysalides—such as caterpillars and a great number of flies—are enveloped with triple and quadruple coverings of gum, silk, wool, floss, leaves, &c. Go on the return of spring and visit these nests, and you will see all these waken up in full life.

The snails and slugs, which appear the most exposed, know perfectly when to find, in old walls, cellars, the hollow trunks and roots of trees, retreats impenetrable to the cold; whilst we men in our improvidence build our houses and prepare our clothing as if the winter was never to be severe. The snails and insects, on the contrary, take their precautions every year, as if the frost must be terrible. Never does the butterfly neglect to surround its eggs with a thick covering of down—never does the snail, towards the middle of November, fail to gain its retreat; and, as soon as it is housed, it adds to this carefulness that of solidly closing the opening of its shell with two, three, or sometimes four partitions. These molluscs are the wisest of sages. The coleoptera, for the most part, in

winter are in the state of larvæ, and, as we have stated, in proportion as the cold increases they bury themselves in the earth. The lumbrica or earth-worms, which are not otherwise injurious, use exactly the same means.

For their preservation these are the most precautionary of beings; the bird, on the contrary, who for sheltering its young ones constructs in spring *chefs d'œuvre* of architecture, does nothing for itself. The winter will find it on the branch. Where does it sleep during the interminable winter night? If the cold of the north wind is not sufficient to keep it awake, hunger—horrible hunger—torments it, and terror comes to join it; nocturnal birds of prey, even the foxes and wolves, hunt it terribly; while during the day it is the victim of the sparrow-hawk, the buzzard, and man. "Larks! larks!" they bring them by cartloads to our fairs and markets. "I am astonished at the great ignorance of man," said Bernard Palissy, nearly three centuries ago. Do they think that if he were to return in our days that great naturalist would hold a different language?

The birds will therefore, of all animals, be those which suffer the most from cold.* Their numbers, already reduced, will be still more diminished, and the incessant hunting to which they are subjected affords little hope that their loss will be repaired; and, besides, we see them become still scarcer after every severe winter. On the other hand, the insects multiply abundantly; and the cockchafer alone cause in this country every year still greater disasters. In proportion as the birds disappear, the insects become more and more a public danger. Do not therefore imagine that they will be diminished in numbers by the present hard winter; under our feet, in the earth, above our heads, in the branches of the trees, and even in our habitations, they have leaped for joy to see that continuous snow which causes them to hear on all sides "Larks! larks!"

For ourselves, who can so little foresee the cold, heat, abundance, and scarcity, let us endeavour at least to recollect well that if the birds disappear from the midst of us we shall perish, devoured by insects. Let us cease, therefore, to reckon upon the frost to destroy them, for it can only promote their multiplication.

THE RING-DOVE, OR WOOD-PIGEON.

The wood-pigeon, by which name it is generally known, is at this time so numerous that it is really very likely to be one of the greatest of our natural-bred scourges. They visit us in flocks—not of hundreds, but at times actually of thousands. During the months of October and November they collect together, clearing-up the beech-nuts and acorns, after which they consume the turnip and swede greens, and to that extent do they finish their work that the bulbs of scores of acres are left as bare as stones, fully exposed to the inclemency of the winter. At intervals, and up to late in spring, they scrub the young clovers, and destroy, injure, and weaken them to a very serious extent. Early-sown peas are also damaged, and frequently made patchy and bad, if not wholly destroyed. Cabbage plants put out in the fields in February, March, and April for stock-feeding are sure to be seized on, the hearts picked out, and outside leaves riddled all to pieces. Winter and spring-

sown tares, podded peas, and other things are gobbled up to a serious extent. What is to be done with this pest, is no easy question to answer. They have a very sharp eye and quick ear, and have always scouts out on the alert on trees of the surrounding country, where they are feeding. As soon as the scouts perceive an enemy, off they fly, giving such a crack with their wings that in an instant their whole retinue is alarmed, and is on the wing, most of them giving the same "crack." You may occasionally get a shot at one by lying in wait a long time, well hidden. But even then, so thick and strong set are their feathers, that they require to be well hit with a strong charge before you can bring them down, for they can carry off an extraordinary lot of shot. I have heard

* Many years ago, during a severe winter, the translator found sixteen wrens dead in a waggon from cold and hunger.

they are to be caught by soaking peas till soft, placing them thus on fish-hooks tied on long lines laid down, and pegged well, in their feeding places. Another plan is to soak peas or wheat in whiskey or gin, and sow them about their feeding places, when, if they devour enough to make them drunk or sleepy, they may, by keeping a sharp look-out, be occasionally picked up. I fear this, however, would not be a very paying plan, particularly to those who may have any other employment. But it is quite time we should have some sort of trap or invention whereby the effect of their destructive propensities might be lessened, seeing what a material loss we now suffer. As to the breeding of the ring-dove, or the wood-pigeon, there are none of our native birds, to my knowledge, which breed or nest so many months in the year as the wood pigeon. They commence cooing and nesting in the ivy trees and evergreen trees and shrubs early in March. Many of their eggs from this month until June are taken and devoured by the crafty, gaudy-dressed jay, which does good service in this way, till young peas afford the jays better living. Then, from June

till October, an immense number of young pigeons are hatched in the great game covers, woods, and pine plantations, when everything is full of foliage. I have often seen the same nest used a second time, for these birds are careless, idle builders—so careless that their young often fall out, there being no sides to the nests, and a very slight bottom. I have seen scores of their nests here in the high rhododendrons, laurels, hays, pines, &c., up to November. I once saw a pair of young birds in a laurel tree in December. The majority of the young birds, as far as my observation goes, are hatched in the months of July, August, and September. I have often seen the young birds in their nests, sleeping with their heads resting on their great crops, which have been full of peas, wheat, tare-seed, or various grass seeds. They also feed much in winter and early spring on ivy berries. Though so wild in winter, they are very tame, cosy, and venturesome in the breeding season, and will sit in their nest close to places of traffic, noise, and talking.

JAMES BARNES, Bicton.

HOW TO HAVE GOOD MILKERS.

No matter what breed of cows you have, something is necessary to reach the highest success of raising milkers. And our farmers ever expect to raise good stock from cows to which, for the purpose of making the milkers, they have been in the habit of using any runt of a bull they could pick up.

It's a great thing to have good blood; whether it be in Ayrshire, Jersey, or shorthorn grades; but apart from this important advantage, the course of treatment in raising a milker is somewhat different from that in raising a beef animal or animal for labour.

The calf should be well fed and petted while young. Well fed to produce a rapid growth, so as to enable the heifer to come in early; petted to make her gentle and fond of the presence of her keepers. Fondling helps to create a quiet disposition so important in a dairy cow, and this education must begin when young.

For a milker, we would have the heifer come in at two years old, and if she has been well kept, so as to have attained good size, she is then old enough to become a cow. She will give more milk for coming in early. It forms the habit of giving milk, and the habit, you know, is a sort of second nature. An older bull is better. We use too many young bulls. A three or four year old is far better as a stock getter than a yearling, and many prefer a five or six year old to any other. After the heifer comes in let her be fed regularly. Water is preferable to all others for stall feed. A little oatmeal induces a large flow. Indian meal is rather fattening. Bad weather give her a clean airy stall.

A cow newly come in should not drink cold water in cold weather, but moderately warm slop. Calves intended for using should be taken from the cow within a few days, and they will be less liable to suck when old. Feed them first with new milk for a time, then skim milk, then sour milk, taking care that all the changes are gradual by adding only a portion at first, and gradually a little meal.

Calves well fed and taken care of, with a quart or two of meal daily in winter, will be double the size at two years they would have attained by common treatment.

Heifers thus treated may come in at two years old, and will be better than neglected animals at three, and one year of age saved.

Heifers dried up too early for calving will often run dry in three years, therefore be very careful to milk closely the first year until about six weeks before calving.

Heartily eaters are desirable for cows, and they may usually be selected while calves. A dainty calf will likely be a dainty cow.

Heifers should become accustomed to be freely handled before calving and drawing their teats. They will not then be difficult to milk. Begin gradually, and be careful not to rile them.

A milking cow, divide the time as nearly as practicable between morning and evening, especially at the time of early season, that the udder may not suffer.

Persons who milk should keep their nails cut short; animals are sometimes hurt with sharp nails, and are unjustly charged with restlessness.

To determine which cows are best for keeping, try their milk separately, and weigh their butter; for sometimes a cow may give much milk and little butter, and vice versa.—*Colman's Rural World*.

THE FARMER'S FIRESIDE.

Around the fire, one wintry night,
The farmer's rosy children sat;
The fagot lent its blazing light,
And mirth went round and harmless chat.

When, hark! a gentle hand they hear
Low tapping at the bolted door,
And thus to gain their willing ear,
A feeble voice was heard implore:

"Cold blows the blast across the moor,
The sleet drives hissing in the wind;
Yon toilsome mountain lies before,
A dreary treeless waste behind.

"My eyes are dim and weak with age;
No road, no path can I descry;
And these poor rags ill stand the rage
Of such a keen inclement sky.

"So faint I am, these tottering feet
No more my palsied frame can bear;
My freezing heart forgets to beat,
And drifting snows my tomb prepare.

"Open your hospitable door,
And shield me from the biting blast;
Cold, cold it blows across the moor,
The weary moor that I have passed."

With hasty steps the farmer ran,
And close beside the fire they place
The poor half-frozen beggar-man,
With shaking limbs and pale-blue face.

The little children flocking came,
And chafed his frozen hands in theirs;
And busily the good old dame
A comfortable mess prepared.

Their kindness cheered his drooping soul,
And slowly down his wrinkled cheek
The big round tear was seen to roll,
And told the thanks he could not speak.

The children then began to sigh,
And all their merry chat was o'er;
And yet they felt, they knew not why,
More glad than they had done before.

THE REV. PATRICK BELL, LL.D.

This reverend gentleman, to whom the oldest practical agriculturist in Scotland, the Marquis of Tweeddale, awards the palm of having designed the only reaping-machine that he has ever found worth using, was born in 1800, and has been for many years the minister of the parish of Carmylie, in Forfarshire—a living of only £150 per year. We have from time to time during the progress of the £1,000 testimonial adverted pretty fully to the circumstances under which Mr. Bell's invention was perfected; how, forty years ago, he arrived in Edinburgh with a model of it not much bigger than a rat-trap under his arm, to show to the Highland and Agricultural Society authorities; and how he laboured at it secretly in an outhouse, till the advent of that happy moonlight night when he and his brother got the horse out of the stable, harnessed it to the machine, and laid the corn-stalks low at last. This was in 1826-27; and the machine, which is still preserved as a trophy, was worked continuously up to last year. Mr. Bell had laboured, and other men, Americans more especially, had entered into his labours, and yet while thousands of pounds were saved annually by his machine, even Scotland had given no public recognition to her benefactor. Mr. Scott Skirving, of Camptoun, near Drem, introduced the subject to the East Lothian Agricultural Club on Oct. 5, 1866, and in the following January at the meeting of the Highland and Agricultural Society. Both acknowledged the justice of a claim which had been too long overlooked, and the society not only subscribed £100, but gave valuable official aid in the collection of subscriptions, which was equivalent to nearly £100 more. The clear sum collected still falls short of £1,000 by about £120, and it is to be hoped that English agriculturists, who owe as much as their Scottish friends to Dr. Bell's invention, will not hold back as they have hitherto done. Mr. Skirving was met

with plenty of counter claims both in England, America, and Scotland; but the makers all seemed to be in the most blithely ignorant of the fact that there were claims long antecedent to theirs. One and all, with the exception of the "American," had sunk into oblivion, because they were utter failures. The earliest of the American were copies from Mr. Bell's, a picture of whose machine had been given in the *Quarterly Journal of Agriculture* (1838), of which several copies were found to have crossed the Atlantic. Pliny and other Roman writers on agriculture mention some machine of the kind, which tore off the heads of corn and left the straw as valueless. In 1785-6 Arthur Young takes up the tale, and describes a machine of the same kind, and so do Mr. Capel Loft, and Mr. William Pitt in his "Survey." In 1799 one Boyce took out a patent; in 1800, Richard Mear; in 1803, Hawkins, of New Jersey, U.S.; and in 1805, Plumb, of Deptford, all produced machines; and in 1804, Mr. Gledits, of Kirkcudbrightshire, got a premium for one from the Highland and Agricultural Society. Mr. Kerr, of Edinburg, received several small grants from the same source; and Mr. Scott, of Ormiston, East Lothian; Mr. Joseph Mann, of Cumberlaid, and Mr. Ogle, of Alnwick, all tried their hands in 1815, 1820, and 1822, respectively. Their fame was, however, so fleeting that Mr. Bell had never even heard of any machine of the sort, except that made, amid his other countless activities, by the late Mr. Smith, of Deanston. In consideration of his invention, the Senate of the University of St. Andrews recently conferred on Mr. Bell the degree of Doctor of Laws. Our portrait is from a photograph by Mr. E. Strachan, of Arbroath.—*Illustrated London News* (which gives a portrait of Mr. Bell).

CALENDAR OF AGRICULTURE.

The sowing of barley is finished by the middle of the month. Sow quickly as the land is ploughed with one furrow from a green crop tilth; roll across into an even surface, on which sow the grass broadcast, and cover with a single-tine of the light harrows. Sow flaxseed on the same lands, and cover in the same way. Sow lucerne on rich grounds well-prepared by deep ploughing and manuring, cleaned and rolled, and near to the homestead for green food.

Sow grass seeds on the grounds of winter wheats. If the surface be cloddy and harsh, harrow it before sowing, and again after that process, and finish with a heavy rolling.

Sow spring vetches by the middle of the month, as the second or third sowing of that most valuable esculent, on a good quality of soil in a stubble or ley. Harrow the surface finely, and roll heavily. Seed amply with three to four bushels on an acre.

Finish the preparation of grass meadows, and shup up hay grounds. Top-dress young grain and grasses with auxiliary substances, as soot, nitrates, sugar-scum, rape dust, and similar bodies.

Get prepared as quickly as possible the fallow grounds for early root crops. About the middle of the month plant potatoes in drills 30 inches apart, and deeply done, with the hollows half-filled with farm-yard dung in a very moist half-putrescent state, and spread evenly along the drill; place the tubers newly cut among the dung nine inches apart, having at least one good eye, the set being as large as possible, and pressed into a position by the foot of the planter. Cover the dung by splitting the drills with the common plough; a heavy furrow from each side of loose earth rolls the whole width of the drills, and forms a complete covering. Roll the drills with a weight of 5 or 6 cwt.

In the last week of the month plant beet-root on the best loams of clay, prepared as for potatoes, dunged and drilled at 28 inches distance, the drills split by the plough, and the seeds sown on the fresh ridglets by machine, or dibbled in by hand. The seeds may be previously steeped in any acid solution, and dried with hot lime; the drills are rolled as with potatoes.

Lime is very usefully applied with these two crops on the cultivated surface of the land before being drilled. The lime must be pulverized by water and turning of the heap on the headland of the field, and in a hot quicksilver condition spread over the land, and covered by the harrow. The two drillings mix the lime into the soil, which is much aided by the hand hoeings of the crop, as every movement promotes the action of caloric in raising the temperature of the ground, which may form the chief benefit derived from the very powerful stimulant of incinerated bodies. The cool season of the year prevents any danger from exsiccation, as happens on warm soils at a more advanced period, and by drying up the moisture, destroying the turnip crop. For these soils and seasons, the lime in cinders is best applied on the stubbles of the previous year, and ploughed into the winter furrow.

Early crops will now require both horse and hand hoeing, as carrots, lucerne, wheat, beans, and peas. Begin the paring and burning of rough lands, of old surfaces, and of coarse herbage: if pared during winter, the burning will be the readier done. The turfs may be moderately burned into a black torrefied mass, as in that state there will be the largest quantity of carbonaceous matter. It is the best method yet known of bringing into cultivation all lands that contain much fibrous, inert, and ligneous matters. The benefits of pulverization and warmth are at once conferred.

Burn into ashes, or torrefied fine earths, for application to turnips by the drop drill, all earthy and vegetable substances found on the sides of roads and water-courses; also mossy and all combustible substances.

Watered meadows, rye, winter vetches, and barley will now come into use for soiling cattle in the yards, and for being consumed on the ground

by ewes and lambs. The food may be best used by being mown and placed in racks which are regularly moved over the mown ground. Fold the sheep nightly on the cleared space, allowing in the fold two square yards to each animal, and two nights in one place.

Lambing will now be nearly finished. Remove the strongest lambs to the pasture fields; cut turnips and beet into slices to be placed in troughs, mixed with oats and bruised oilcake. Attend most carefully to young animals at this period of the year.

The long days will now require more food for the animals of the farm. Give to milch cows an ample allowance of juicy food, natural or prepared—cabbages, steamed roots, and chaffs; to fattening bullocks, swedes and beet-root; to store animals, turnips, hay, and straws. Give to young calves in the milk bean and barley, cake and linseed bruised. The oldest calves will now learn to eat vetches and early green food, to withdraw the milk. The licking of chalk and rock-salt is beneficial in the pens.

Fat and aged cattle must now be all sold from the winter stalls, the fattening being ended with oilcake to finish the animals. The most backward in condition must go to grass.

The season of curing bacon being over, all pigs on hand must go on for summer stores, and come in for early fattening next winter. The earliest lambs may now come in for fat.

Feed poultry as has been directed.

During wet weather carry all the dung from the cattle-yards to the heaps in the fields, and litter the yards afresh for the summer-soiling of horses and cattle.

Prepare the lands for green crops, keeping most forward the parts for swedes next month. Plough clay lands for a wheat fallow.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Asparagus will now be seen rising, and must be cut so as to avoid injuring the crowns, either by too rigid excision, or by uselessly wounding the adjoining shoots. To remedy the miserable mistake of frequent occurrence, which produces an insipid stuff of an inch or two at the top of a long stick of pack wax, and to substitute a real good grass of which six inches shall be high in colour, full in flavour, and tender in the whole length, we have ventured in a previous column to describe, and now again allude to, a method of making a deep and rich bed. It remains only to say that the ground having settled, it is to be divided by 12 or by 15-inch wide alleys into so many beds, about 36 inches wide, as the ground may admit—these are to be raised about four inches above the alleys by earth shovelled off the latter. The surface being then raked to perfect fineness, two drills are drawn an inch-and-a-half or two inches deep, one foot from the edge on each side, and as much apart. The best asparagus seed is to be sown two or three inches apart along the course of the drills,

and immediately firmly covered with light earth. As the plants rise, they are now and then thinned-out to stand at first three inches apart, then six inches: guano-water very weak will promote growth and strength. Such seedlings, when thinned to one foot asunder, and properly managed, will produce plants as strong and durable as if two-year-old plants were purchased. Should that plan, however, be preferred, the fine earth ought to be raked off the alleys to four inches level depth: the line then being stretched, the plants are to be placed by it, the roots being opened, spread flat, and extending every way; over which the crowns being retained upright in the centres, the earth is to be evenly spread, and pressed carefully down; a good watering from the rose finishes the operation. The ground cannot be too turfy and clear of stones; and if it be manured to the extent of full-half the bulk of the whole earth, so much the better.

Sea-kale beds being prepared in much the same way, are to be sown with sound seed by the line: three seeds in a small circle of six inches diameter, two inches deep, and the circles two feet apart:

the rows may be single, at four feet distances; or if double, two feet asunder to form a bed.

Plant potatoes, and the main crop and second early artichoke suckers, if well-rooted, in prepared beds, choosing showery weather. All seed-tubers should be rather immature: if planted whole, success is more certain, though two-eyed tubers bear well.

Sow peas: the Scimitar as a profuse bearer, and Prussian and broad beans twice, of any approved sorts, both as succession, at any period of the month.

Sow for main crops cabbages, Savoy, Scotch kale, Brussels sprouts, winter and spring broccoli, spinach, beet, parsnip, carrot, and onion—all in the first days. Cabbage and savoy will afford successions, if sown early and late in the month; spinach repeatedly; silver onions very thickly, for drawing young; onions for bulbing, and leeks; celery, in Seymour's white and hardy red, in gently warm leaf-beds. Sow nasturtiums and aromatic herbs.

Transplant cabbage and lettuce; but expect the last to run—cauliflowers, celery, sea-kale, and celeriac from the seed-beds, to become stocky in intermediate beds; and prick-out on beds of very rich soil, chiefly of reduced yard-dung, a number of choice celery plants to become stocky.

Sow, about the 20th of the month, on ground that is warm and dry, the first crop of kidney beans, of both kinds. As this crop often fails, and the early leaves are destroyed by snails and slugs, much disappointment will be saved by sowing three in a pot in March or early in April. When three or four inches high, if turned out into shallow trenches in a pretty rich soil, a few inches apart, the plants thrive remarkably well: the same may be said of runners, and all require watering in dry weather. An ounce of very pure and rich guano, stirred up in two gallons of water, and applied in half-a-pint to each three plants, has been found to act vigorously on the health and verdure

of transplanted beans, as it confers on the soil very small and extremely diluted portions of phosphate of ammonia and of lime, urate of ammonia, common salt, sulphate of potassa, and some valuable animal matter. True guano, carefully applied, is a capital enricher of old and poor stable-dung, animal droppings, and leafy composts.

Dress all the beds with hoe and rake, earth-up and stick peas, and attend to neat order.

FRUIT DEPARTMENT.

Strawberry beds, or rows newly-planted, must be very amply watered in almost constant applications, when strong droughts set in.

Cucumbers should be thinned to a regular number of shoots, and stopped at a fruit, and not the joint beyond it.

FLOWER GARDEN.

Sow annuals for summer as the main stock, or as a succession to those in March; propagate herbaceous plants by slippings or rooted offsets. Attend to annuals in pots, and thin-out the seedlings.

Weed, hoe, and rake, removing the flower stalks by scissors.

Sweep and roll the lawn, and begin to mow it in growing, showery weather. Plant or renew box edging, and clean the gravel walks, rolling them after rain.

Guano in fine powder, one ounce to the gallon of soft-water, is a most useful stimulant to succulent plants of many kinds.

A change of situation is as essential to flowers as to crops, and the ground must be renewed, changed, and timely enriched. Beds are best changed by entirely removing the soil to the compost ground to be used as fallow, and placing a new earth in the vacant space to receive the plants, and this earth may be new loam; decayed turf, old dung of cattle, leaf-mould, and turf heath soil, being the best materials, according to the knowledge of the present time.

SALE OF MR. ROBERT SMITH'S EXMOOR COBS AND PONIES.

These little horses were distributed on March 17, at Bristol, some going as far north as Cumberland; others west, into Cornwall; south, to Brighton; east, to London; and to Northampton, in the midlands. There was a large attendance, and some spirited buyers; but still the recent sale of the Duke of Beaufort's horses in Bristol, as well as the Rugby and Warwick meetings, tended to reduce the competition. The arrangements were good, and the business commenced at 1.15 to the minute; the auctioneer having only these instructions—"to warrant 'em sound, and sell 'em." The catalogue comprised thirty-six animals, commencing with ponies for children or pony carriages, and running on to ponies for saddle or basket carriages, ponies for general purposes, galloway and cob ponies, galloways, cobs, and lastly, park hacks. As a proof of their qualities, and the sale they command, the average was a shade over that of the last few years, and all were sold. The eight ponies were especially nice in their form and action; but they did not sell with spirit, the average being 15 guineas each, with Young Bobby, by the Chieftain, out of Master Bobby's dam, the pick of the basket, and making, unbroke, 21 guineas. The eight galloways, as a lot, were clever goers, and well framed, long and low, especially Bertha, purchased by the Hon. L. Melville at 32 guineas; while Pride of the Moor goes to the Continent at 33½ guineas; and the racing gallo-

way Ballarat to Colonel Somerset for 25 guineas. The Druid led the way amongst the cobs at 35 guineas as a hack for Lord Portman; he is by the Bald-faced Stag, and as fashionable a little horse as ever entered a ring. Joey followed at 34 guineas, to carry a fifteen-stone M.P., not to hounds, but to the House of Commons. Gamster, a stylish nag, did not take with the public, and went at 26 guineas to a dealer; but Talavera, a beautiful grey, made the first sensation of the day: his light action and uniformity of outline were truly good; and he goes to town, for the park, at 45 guineas. Troubadour was also a favourite with some, but a little overgrown; while at 35½ guineas he, too, is bound direct for the park. Serenader, an elegant hack or lady's horse, realised the highest figure—54½ guineas; a cheap lot, nevertheless. He had been put at a much higher figure; and Mr. Smith once refused 70 guineas for him at home. Oscar, by Lord Exeter's Nubahell, was a neat one, and a favourite, for general purposes; good in harness, with his mission to ride and drive about town, at 41 guineas.

The lot came out in better show form than usual, and in harder condition for the business of "the season." There will, we believe, be another sale in the autumn, as Mr. Smith is leaving his farm at Exmoor.

THE OVER-PRESERVATION OF GAME.

In the First Division of the Court of Sessions a case was tried before Lord Barcaple and a jury in which Mr. George Syme, residing at Coaston, in the parish of Aberdour, and County of Fife, tenant of the lands of Meikle Couston and Muirton Park, in the parishes of Aberdour and Dalgety, as also of the lands of Chester and Kirk Park, Hattonhead Park, and Barns Farm, also in the said parish of Dalgety, is pursuer; and the Right Hon. Archibald George, now Earl of Moray, and the Hon. George Philip Stuart, brothers of the late John Stuart, Earl of Moray, trustees and executors appointed by, and acting under the trust-disposition and deed of settlement of, the said John Stuart, Earl of Moray, are defenders. The following issue was sent to the jury:—

"Whether, during the year 1865, the said John Stuart, Earl of Moray, had upon the said lands, or any part thereof, of an unreasonable and excessive stock of game, beyond what existed thereon at the dates of entering into the said leases respectively—to the loss, injury, and damage of the pursuer?" Damages laid at £270.

Mr. Balfour, in opening the case for the pursuer, stated that so long as the game did not exceed a reasonable and fair average stock the tenant could not complain; and although there was more than the usual average stock, yet a tenant may not have a right to complain, provided that stock had not been increased since the date of his lease. But if, after letting the lands to a tenant for the purpose of raising crops—for the beneficial enjoyment of these lands as an agricultural subject—the landlord increased the stock of game, whether by active preserving or failing to kill them down, then he was liable to the tenant for the damage done to the crops by that excess over what was reasonable, and what existed at the date of the lease. That was what they said the Earl of Moray had done under the issue.

Mr. George Syme, the pursuer, deposed: The lands contain about 360 acres, for which I pay £1,000 a-year. When I entered, there was not above an average quantity of game, which consisted principally of hares and pheasants. In 1864, I made complaint to Mr. Philipps, factor for the Earl Moray. He would do nothing to relieve me. The game went on increasing in that year and after. In 1865, the damage might have been observable to some extent to a passer-by. I cannot say what amount of damage I might have sustained by an ordinary stock of game. In 1865, I counted between seventy and eighty hares in a field of twenty acres one evening. The pheasants were so numerous that it was impossible to count them. I have seen, six or eight times, seventy or eighty in a field at a time. 1865 was a very favourable year for crop. Mine was very much injured. I had never seen it so much injured before. I had proposed to Mr. Philipps to get mutual valuers to estimate the damage done to the crop that season. He would not go into the proposal, and I got Mr. Christie of Scots-craig, and Mr. Horne of Drumtenant, to come and make a valuation on my own account. The pheasants were fed by the keepers in winter in plantations on my lands; they were fed up to the time of sowing the fields.

Mr. Young: The keepers thus feed them up to the time they were able to feed themselves from the corn sown on your fields?

Witness: Yes. Game is kept down by shooting. All the shooting there was over the lands was not sufficient to keep the game in check. I could not pay the rent out of the farm with the game as it has been since 1864.

By the Dean of Faculty: The factor wrote me something about the game before I took the Barns. I think he said in it that he would have asked 10s. an acre more for the land but for the quantity of game upon it.

Mr. Christie, farmer, Scots-craig, deposed that on the 11th August, 1865, he, along with Mr. Horne, farmer, Drumtenant, made a valuation of the damage done by game to the pursuer's farm, and estimated it at £243 14s. 3d. That's the damage in excess of what game properly attended to should do. He saw good many hares and pheasants in the fields, but few or no rabbits. He could distinguish pretty well between destruction made by rabbits and hares. The rabbits bite low down and

eat up the crops in the early part of the season, but the hares make roads through the fields and bite at the top as well as below, and destroy the crops at all stages. The pheasants pluck up the braird in the first stage, and trample down the plant and pick the grain out of the ears in the second. The damage spoken to was done by hares and pheasants. Some of the fields indicated a very bad state of excess of game. He had not seen much worse. The crop on the farm was rather a good one that season. There was no appearance of bad farming. The fields were well cultivated, and there was no appearance of the land having been insufficiently manured. He believed the damage would turn out to be greater than he had estimated.

Mr. William Horne, farmer, Drumtenant, deposed to having visited the pursuer's farm in May, 1865, and to finding then an excessive stock of game, both as shown by the number of animals and the damage done. He afterwards estimated the damage with Mr. Christie in August. In May he observed a barley-field, where he estimated half of the seeds had been carried off by pheasants. He also saw other fields more or less damaged from hares and pheasants. He never saw fields so much damaged by game. He concurred in the estimate of the damage made in August by Mr. Christie.

Charles Lloyd, late gamekeeper to the Earl of Moray, deposed that in 1864 and 1865 game on the lands might have increased two to one as compared with three or four years before.

James Macdonald, servant to the minister at Dalgety, counted, one day in the month of May, 1865, ninety pheasants in one of Mr. Syme's fields. He never counted the hares he saw in the fields; that was too difficult; they were so many.

Mr. Shand having stated the case for the defender, Mr. Philipps, commissioner for the Earl of Moray, deposed: I let the farms in question to Mr. Syme. I sent him a letter previous to his taking Barns, in regard to the rent and game. In that letter I said: 'Were it not that we are obliged to make some sacrifice on account of game, which, as you know, is abundant, I should look for from £3 15s. to £4 for the land.' The deduction that was made was considered to be a fair equivalent for the amount of game. Mr. Syme spoke first to me seriously about the game in the year when he asked me to appoint a person to go over the ground with another. As that would be an acknowledgement we would be liable for damages, I did not appoint a person as he wanted. But for the abundance of game I would not have let the lands at less than from 15s. to £1 an acre more than Mr. Syme is paying. There are a great many wood-pigeons in the plantations, which would do incalculable damage. There is a considerable stock of rabbits.

By Mr. Young: I have seen as many as fifty hares in the fields occupied by the pursuer before he entered upon possession of them.

James Robertson, farmer, Hilltown, Blairadam, deposed that he rented the grass parks at Donibristle, adjoining Mr. Syme's land, and when he took the parks he saw as many as fifty hares on the young grass; and in walking over the policies he saw a great many pheasants. He would give £3 an acre for the farm of Barns—estimating a depreciation on account of game of 12s. to 15s. per Scotch acre.

The gamekeeper and servants at Donibristle deposed generally that the game had decreased during the last ten years.

Mr. Young having addressed the jury for the pursuer, and the Dean of Faculty for the defender,

Lord Barcaple summed up, remarking that if the landlord was keeping the stock of game at such a mark that a favourable season would so increase it that it would become destructive to his tenant's crops, and greatly larger in amount than it was when he entered into the contract, it seemed to him that was just a case in which they would be justified in calling it an excess.

The jury, after an absence of three-quarters of an hour, returned with a unanimous verdict for the pursuer, and assessed the damages at £197.

STALLIONS FOR THE SEASON, 1868.

[NONE BUT THOROUGHBRED HORSES ARE GIVEN IN THIS LIST].

Name.	Colour.	Age.	Pedigree.	Performances.	Principal Performance.	No. Winners out by	Sire of	Standing at	Apply to	Price.
A. I.....	brown..	6	by Sweetmeat, out of Juanita Perez, by never appeared ..		—	—	—	Port Paddocks, Ruan, Clare	—	5 boys, h. b. 3 boys.
Amsterdam	bay	13	by The Flying Dutchman, out of Ursula, by started 48, won 14		won Chesterfield Plate ..	7	Halifax.....	Bahus, near Bomford..	Mr. Church	15 gs.
Ashtcliffe.....	brown..	16	by Melbourn, out of Fausts, by Dr. Faustus started 6, won 0		—	untried.	—	Knighton, Radnor	Mr. Griffiths	5 gs., h. b. 2 gs.]
Apprentice.....	chestnut	6	by Idle Boy, out of Miss Julia, by Don John never appeared ..		—	untried.	—	Lambourne	A. Saxon	5 gs.
Ariel	brown..	6	by Voltigeur, dam by The Cure..... started 5, won 0		—	untried.	—	Middle Park, Eltham ..	Mr. Blomkron	10 gs., h. b. 5 gs.
Arthur Wellesley bay	bay	17	by Melbourn, out of Lady Barbara, by Laurence started 7, won 1		won Two-year-old Stakes at Manchester	12	Arcadia	Richmond, York.....	Mr. Wright	18 gs.
Artillery.....	bay	15	by Touchstone, out of Jeanette, by Birdcatcher started 31, won 7		won the Criterion	39	Redan	Lark Lodge Stables, Carragh	—	10 boys, h. b. 5 boys.
Asteroid	bay	10	by Stockwell, out of Teetotum, by Touchstone started 12, won 7		won Chester Cup	untried.	—	Danebury, Stockbridge	—	150 gs.
Asterstone.....	brown..	10	by Touchstone, out of Lady Harriet, by The started 42, won 16		won the St. Liz Handicap	untried.	—	Hurstbourne Park, in Whitechurch	The groom	15 gs.
Autocrat.....	bay	16	by Bay Middleton, out of Empress, by Emilius started 5, won 3		won the New Stakes....	16	Bubbles	Lymington	Mr. Thorn.....	10 gs., h. b. 5 gs.
Bacchus.....	chestnut	7	by Claret, out of Mona, by Polish or Micky Free started 11, won 3		won £1,340 (h) Newmkt.	untried.	—	Newmarket	Messrs. Barrow...	10 gs.
Bel Demonio (late Harvest Nell)	chestnut	7	by Weatherbit, out of Augusta, by Birdcatcher started 14, won 6		won £200 (h.), Stockton	untried.	—	Highfield Paddocks ..	Stud groom	5 gs.
Ben Webster ..	bay	11	by Barniton, out of Basalshaw, by The Prime started 31, won 94		won Chester Cup	untried.	—	Livery Stables, York..	Mr. Ellerington	10 gs., h. b. 2 gs.
Elair Athol	chestnut	7	by Stockwell, out of Blink Bonnie, by Melbourn started 6, won 5		won the Derby	untried.	—	Fairfield, York.....	Mr. Jackson	100 gs., full.
Blarney	chestnut	7	by Claret, out of Mag on the Wing, by Magpie started 7, won 6		won £320 at Shrewsbury	untried.	—	Roxborough, Moy, Irid.	—	5 gs., h. b. 3 gs.
Blithfield	brown..	8	by Mountain Deer, dam by Bustard		won £1, Autumn H. Liverpool	untried.	—	Coole-Adree	—	5 gs., h. b. 2 gs.
Blue Mangle	bay	8	by Kingston, out of Pandemon, by Paragon		started 60, won 9	—	Primrose	Bennington, Stevensage	Mr. W. Heath ..	10 gs.
Bonnyfield.....	bay	10	by West Australian, out of Queen Mary, by never appeared ..		—	1	—	East Barnet, Herts	H. Smith	10 gs., h. b. 3 gs.
Broadbans	chestnut	6	by Stockwell, out of Blink Bonny, by Melbourn started 24, won 9		won Prince of Wales S. Ascot	untried.	—	Whitwell, Cullerose ..	R. Heselline....	10 gs.
Bocket.....	bay	18	by Melbourn, out of Miss Slick, by Muley Moloch started 27, won 3		won Royal Hunt Cup ..	8	Sir Hugh	Mannhead, Exeter.....	Mr. Bazley	20 gs.
Broomfield	bay	6	by Stockwell, out of Queen Mary, by Melbourn started 18, won 7		won Prince of Wales S., Newmarket	untried.	—	Blankney, Lincoln	W. Bartholomew	10 gs., h. b. 5 gs.
Buckphus	bay	9	by Discord or Crozier, out of Helena, by Turcoman		—	—	—	Hop Grove, York.....	H. Prince	5 gs., h. b. 2 gs.
Buckingham	chestnut	7	by Voltigeur, dam by Ithurial		started 18, won 5	won Buckenham Stakes	—	Wem, Salop	Mr. Clay	10 gs.
Cambrian	chestnut	10	by Newminster, out of Arrow, by Slane		started 13, won 7	won July Stks., Newmkt.	—	Park Paddocks, Newmkt.	Mr. J. Savage ..	25 gs.
Camerho	bay	10	by Stockwell, out of Sybilphie, by Touchstone		started 41, won 7	won Doncaster Stakes	—	Palmville, York	Mr. Martin	15 gs.
Canary	bay	10	by Orlando, out of Palma, by Plimpco		started 31, won 2	won Royal B. Cup, Ascot	—	Palmcrosstown, Ireland.	Stud groom	5 gs., h. b. 3 gs.
Canoodle	bay	15	by Melbourn, out of Lady Laurell, by Hornsea		started 5, won 2	won Metrop. Handicap	17	Carston, Rugby	—	5 gs.
Cape Flyaway ..	brown..	11	by The Flying Dutchman, out of Oanszon, by Melbourn		started 26, won 13	won Doncaster Stakes ..	6	Knowsley, Freetoot	Mr. T. Forshaw ..	10 gs.

Character	Sex	Age	Owner	Trainer	Stable	Weight	Time	Place	Notes
Caractacus	bay	.....	9	by Kingston, out of Defiance	started 9, won 9	won the Derby	.....	1	La Muette
Cashier	bay	.....	10	by Riddleman, out of Comet, by Sweetmeat	started 14, won 4	won Newmarket H., \$1,000	.....	1	Cayana
Cassiter	bay	.....	9	by Stockwell, out of Bella, by Orlando	started 3, won 3	won Flinton Stakes	.....	4	Pace
Cathedral	chestnut	.....	7	by Malbourn, out of Stolen Moments, by	started 10, won 3	won St. Nethan H., York	untried.	.....	.....
Cavendish	brown	.....	13	by Voltaire, out of The Countess of Burlington	started 3, won 1	won Convivial Stakes	.....	8	Easby
Cawood	bay	.....	13	by The Cure, out of Brandy Snap, by Muley	started 11, won 1	won a Plate at Newton	.....	3	Stapenhill
Cellarius	bay	.....	9	by Fandango, out of Hybla, by The Provost	started 27, won 3	won £100 at Brighton	untried.	.....	.....
Chalmers	chestnut	.....	6	by Orlando, out of Ayscough, by L. H. St. John	started 1, won 1	won Criterion Stakes	untried.	.....	.....
Chevalier d'Inchiquin	chestnut	.....	14	by Orlando, out of Industry, by Friar	started 14, won 3	won the Greatwick	.....	14	Fripouner
Chief Baron, The	brown	.....	7	by The Baron, out of Caledonia, by Bay Middleton	never appeared	.....	untried.	.....	.....
Cicadell	chestnut	.....	16	by Stockwell, out of Sortie, by Malbourn	started 4, won 3	won Po. of Wakefield, Markt	untried.	15	Blarney
Cicadell	brown	.....	7	by The General, out of Oedipus, by West Australia	started 27, won 3	won G. Duke Michael	.....	.....	.....
Clenmore	brown	.....	7	by Duc au Durru, dam by Slight-of-Hand	never appeared	.....	untried.	.....	.....
Colonel, The	bay	.....	4	by The General, out of Oedipus, by West Australia	never appeared	.....	untried.	.....	.....
Coldstream	brown	.....	30	by Lanceret, dam by Tomboy	started 23, won 7	won Liverpool Cup	.....	33	Lecturer
Commodore	bay	.....	14	by Alarm, out of Dinah, by Clarion	started 25, won 3	won the Ascot Stakes	untried.	.....	.....
Costa	bay	.....	9	by The Baron, out of Catherine Hayes, by Lanceret	started 23, won 7	won the St. Leger	untried.	7	Outaway
Count, The	bay	.....	7	by Stockwell, out of Countess of Albemarle, by	started 20, won 5	won £201 (h) at Beverley	untried.	.....	.....
Cranford	bay	.....	11	by Andover, out of Haricot, by Mango	started 21, won 1	won Zealand Biennial	.....	1	Orton
Cranbury	chestnut	.....	7	by Surplice, out of Rodina, by The Emperor	started 44, won 10	won £285 (h.), Worcester	untried.	.....	.....
Crazer	bay	.....	11	by Orlando, out of Venetian, by Gladiator	started 11, won 3	won the Ascot Stakes	untried.	.....	.....
Daniel	bay	.....	13	by Newminster, out of Lioness, by Ballinacree	started 44, won 10	won Qu. of the Plate, Carlisle	untried.	.....	.....
De Clare	bay	.....	16	by Touchstone, out of Miss Rowe, by Caxon	started 4, won 3	won Newmarket Stakes	untried.	17	Klarinka
Defender	bay	.....	12	by Windhound or Malbourn, out of Ellen	started 27, won 6	won £275 at Chester	untried.	1	Rampart
Diophantus	chestnut	.....	10	by Orlando, out of Equation, by Emilia	started 10, won 6	won the 2,000 Gt. Stakes	untried.	.....	.....
Dixie	bay	.....	4	by Trumpeter, out of Miss Roray, by Hesperus	started 1, won 0	.....	untried.	.....	.....
Don John	bay	.....	10	by Wild Dayrell, out of Cressian Maid, by	started 20, won 8	won £100 at Reading	untried.	.....	.....
Donnybrook	bay	.....	8	by Spirit of Shells, out of Fly, by Lago	started 25, won 8	won £280 (h) at York	untried.	.....	.....
Duke, The	bay	.....	6	by Stockwell, out of Bay Colla, by Orlando	started 20, won 10	won Goodwood Cup	untried.	.....	.....
Durham	bay	.....	7	by Lambton, out of Lady Louisa, by Touchstone	started 20, won 14	won £448 at Stockbridge	untried.	.....	.....
Dundas	bay	.....	10	by Lord of the Isles, out of Marmalade, by	started 8, won 6	Second for the Derby	.....	19	Marlman
Dupe	bay	.....	16	by Sweetmeat	.....	.....	untried.	.....	.....
Eaton	brown	.....	11	by The Flying Dutchman, out of Black-eyed	started 27, won 13	won Granby Handicap	untried.	7	Marbont
Ely	bay	.....	7	by Kingston, out of The Bloomer, by Malbourn	started 20, won 19	won Ascot Cup	untried.	.....	.....
Exchequer	chestnut	.....	9	by Stockwell, out of Stump, by Emilia	started 25, won 8	won £400 at Newmarket	untried.	.....	.....
Finch	bay	.....	6	by Hataphan, out of Ellermire, by Chanticleer	started 21, won 19	won £260 (h.), Liverpool	untried.	.....	.....
Fluke Alarm	chestnut	.....	6	by Trumpeter out of Treacherous, by Pantaloon	started 2,.....	won £100 prize at B.L.	untried.	.....	.....
Fitz-Roland	chestnut	.....	13	by Orlando, out of Stamp, by Emilia	started 15, won 3	won 3,000 Gt. Stakes	untried.	3	Miss Roland

STALLIONS FOR THE SEASON 1868—(Continued).

Name.	Colour.	Age.	Pedigree.	Performances.	Principal Performance.	No. of Winners out by	Sire of	Standing at	Apply to	Price.	
Flash-in-the-Pan Frogmore	bay bay	12 13	by Pontifax, out of Gratia, by Pompey..... Balazar	— by Touchstone, out of Duchess of Kent, by never appeared ..	won the Chester Cup ..	untried. 2	— Frogmore	Kempsey, Worcester .. Eastergate, nr. Burnham ..	G. Hooper..... Mr. C. Field	2 gr. 10 gr., h. b. 3 gr.	
Gemma di Vergy Gemma Junior ..	brown .. brown ..	14 15	by Sir Hercules, out of Swordrop, by Heron .. by Sir Hercules, out of Lady, by Orlando ..	started 33, won 164 .. never trained ..	ran second for Ascot Cup ..	23 1	Gem of the Sea Greyleg	Numbridge, Exeter Cottbridge, Kc's, Norton ..	Mr. Beesley	20 gr. 20 gr.	
General Heas Gladiator	chestnut .. chestnut ..	11 12	by The Nabob, out of Lady Alice, by Lanercost .. by Monarque, out of Miss Gladiator ..	started 74, won 81 .. started 14, won 11 ..	won St. Leger, Nthmpla. won the Derby ..	untried. 11	— Jack in the Green	Althorpe, Northampton .. Middle Park, Eitham ..	Mr. Wilson	6 sovs., h. b. 3 sovs. 100 gr.	
Glenmasnon Grainborough ..	bay chestnut ..	14 15	by Corbithorne, out of Annette, by Priam .. by King Tom, out of Glaffe, by Malbourn ..	started 11, won 4 .. started 10, won 4 ..	won Stwd's, Cp. Goodwood .. won £300 at Newmarket ..	untried. 4	— Plover, The	Warden, Biggleswade .. Montmore-Legh, Bird ..	Mr. Morgan	10 gr., h. b. 5 gr. 5 gr.	
Grey Plover	grey grey ..	17 18	by Birdcatcher, out of Whim, by The Drone .. by Volunteer, out of Titem, by Ion ..	started 2 .. started 6 ..	— —	— —	— Empress	Montmore-Legh, Bird .. Ravensden, Bedford ..	C. Markham	24 sovs. 10 sovs.	
Grinder	roan ..	16	by Birdcatcher, out of Whim, by The Drone .. by Galeor, out of Pharmacopola, by Physician ..	started 2 .. started 23, won 4 ..	— ran 3rd for Stockbridge C.	— 5	— Monitor	Thelwall, near War .. Rushbury, Wolverhampton ..	Mr. Clarke	10 gr., h. b. 3 gr. 20 gr.	
Gulcower	brown ..	18	by Galeor, out of Pharmacopola, by Physician .. by Sir Hercules, out of Yard-arm by 8. Anchor ..	started 23, won 4 .. started 18, won 8 ..	ran 3rd for Stockbridge C. won Northern Metropin.	— 5	— Monitor	Thelwall, near War .. Rushbury, Wolverhampton ..	Mr. Clarke	10 gr., h. b. 3 gr. 20 gr.	
Gunboat	brown ..	14	by Sir Hercules, out of Yard-arm by 8. Anchor .. by Mildew, out of The Gipsy Queen, by Tomboy ..	started 18, won 8 .. started 19, won 5 ..	won Cleveland Handicap ran second for Leger ..	15 3	— Stella	Paln's Farm, Waltham .. Crom	Mr. Phillips	20 gr. 15 gr.	
High Treason ..	chestnut ..	11	by Mildew, out of The Gipsy Queen, by Tomboy .. by West Australian, out of Maria, by Harkaway ..	started 19, won 5 .. started 12, won 1 ..	ran second for Leger .. won £60 at Aberavenny ..	— untried.	— —	Paln's Farm, Waltham .. Marl Hill, Cheltenham ..	Mr. Phillips	15 gr. 5 gr., h. b. 2 gr.	
His Excellency Hollyfox	chestnut .. brown ..	8 7	by Voltigeur, out of Flax, by Surplice .. by Stockwell, out of Flax, by Surplice ..	started 12, won 1 .. never appeared ..	Cleveland Cup, Huntingdn.	— 13	— Redmire	Stoughton-on-Tees .. Wren, Salop	Mr. W. Holman .. J. P. Skeene	5 gr., h. b. 2 gr. 10 gr.	
Honiton	bay	5	by Stockwell, out of Flax, by Surplice .. by Malcolin, out of Envy, by Portion ..	started 84, won 2 .. never appeared ..	won City and Suburban .. won £770 at Newmarket ..	— untried.	— —	Boynton	Mr. C. Fisher ..	5 gr., h. b. 3 gr.	
Hospitality	brown ..	15	by Malcolin, out of Envy, by Portion .. by Stockwell, out of Honeydew, by Touchstone ..	started 84, won 2 .. started 12, won 1 ..	won City and Suburban .. won £770 at Newmarket ..	— 1	— —	Boynton, Bridlington .. Woodgate, Wellington ..	Mr. H. Horner ..	5 gr., h. b. 3 gr.	
Hunter	bay	9	by Stockwell, out of Honeydew, by Touchstone .. by Surplice, out of Ferina, by Venison ..	started 12, won 1 .. —	won R.A.S.E.'s prize for getting hunters ..	— 1	— —	Boynton, Bridlington .. Woodgate, Wellington ..	Mr. H. Horner ..	5 gr., h. b. 3 gr.	
Hunting Horn ..	brown ..	14	by Surplice, out of Ferina, by Venison .. by Muscovite, out of Blackbird, by Irish Bird ..	started 1 .. started 34, won 7 ..	— won Gt. Nthm. H., York ..	— untried.	— —	Somerlet	Mr. Hopkins	5 gr., h. b. 3 gr.	
Ivanhoff	bay	10	by Muscovite, out of Blackbird, by Irish Bird .. by Newminster, out of Mrs. Doda, by Birdcatcher ..	started 34, won 7 .. started 96, won 10 ..	— won Northumbld. Plate ..	— untried.	— —	Marl Hill, Cheltenham .. Bellesale, Richmond ..	H. Thomas	10 gr., h. b. 5 gr. 10 gr.	
Joey Jones	bay	10	by Newminster, out of Mrs. Doda, by Birdcatcher .. by Hurworth or The Ugly Buck, dam by An ..	started 96, won 10 .. started 7, won 0 ..	— —	— untried.	— —	Bellesale, Richmond .. Orlingbury, Welling ..	Stud groom ..	10 gr. 6 gr., h. b. 3 gr.	
John Halifax ..	bay	8	by Hurworth or The Ugly Buck, dam by An .. by Rasplian, out of Hybla, by The Provost ..	started 7, won 0 .. started 8, won 4 ..	— won the Derby ..	— 2	— —	Orlingbury, Welling .. Whitwell, Clitheroe ..	Mr. Manning ..	6 gr., h. b. 3 gr. 30 gr.	
Ketledrum	chestnut ..	10	by Rasplian, out of Hybla, by The Provost .. by Newminster, out of Shanrock, by Y. Priam ..	started 8, won 4 .. started 15, won 6 ..	— won Sales Stbs., Newmkt.	— 1	— —	Whitwell, Clitheroe .. Killean, Philipstown ..	R. Hecelstone ..	30 gr. 5 gr., h. b. 2 gr.	
Kidooan	bay	10	by Kingston, out of Dnah, by Clarion .. by Coverdale, out of The Nugget, by Mol ..	started twice .. never appeared ..	— —	— untried.	— —	Middle Park, Eitham .. Hakelton, Woodbridge ..	Mr. Blekiron ..	20 gr. 8 gr.	
King of the Dales	brown ..	7	by Coverdale, out of The Nugget, by Mol .. by Orlando, out of Forest Flower, by Glancus ..	started twice .. started 61, won 20 ..	— won(h) Newmarket ..	— 3	— —	— Bennington, Stevenag ..	J. Smith	8 gr. 10 gr.	
King of the Forest	bay	14	by Orlando, out of Forest Flower, by Glancus .. by Velocipede, out of Mrs. Gill, by Victor ..	started 61, won 20 .. started 47, won 15 ..	— won the Port ..	— 37	— —	Bennington, Stevenag .. Root, Clithero ..	W. Heath	8 gr. 15 gr.	
King of Trumps ..	chestnut ..	17	by Velocipede, out of Mrs. Gill, by Victor .. by Harkaway, out of Pocahontas, by Glencoe ..	started 47, won 15 .. started 6, won 0 ..	— ran second for Derby ..	— 85	— —	Root, Clithero .. Mentmore, Bucks ..	R. Hecelstone ..	15 gr. Full.	
King Tom	bay	19	by Harkaway, out of Pocahontas, by Glencoe .. by Wild Dayrell, out of May Day, by Venison ..	started 6, won 0 .. started 12, won 2 ..	— won Whitley Stakes ..	— 33	— —	Mentmore, Bucks .. Carlton ..	C. Markham ..	15 gr. 8 gr.	
Kinnaird	brown ..	13	by Wild Dayrell, out of May Day, by Venison .. by Northanger, out of Pocahontas, by Glencoe ..	started 6, won 0 .. started 12, won 2 ..	— won Whitley Stakes ..	— 33	— —	Carlton .. Stanton, Shifnal ..	Mr. E. Kye	15 gr. 20 gr.	
Knight of Khari ..	bay	10	by Northanger, out of Pocahontas, by Glencoe .. by the Knight of St. George, out of Pocahontas ..	started 10, won 2 .. started 32, won 4 ..	— won the Column ..	— 9	— —	Carlton .. Stanton, Shifnal ..	Mr. E. Kye	15 gr. 20 gr.	
Knight of St. bay ..	bay	10	by the Knight of St. George, out of Pocahontas .. by the Knight of St. Patrick, out of Besika, by ..	started 10, won 2 .. started 12, won 3 ..	— won Newmarket Derby ..	— —	— —	Carlton .. Burgley, Stamford ..	Mr. E. Kye	15 gr. 20 gr.	
Knight of the bay ..	bay	5	by the Knight of St. Patrick, out of Besika, by .. Beirum	started 12, won 3 .. —	— won Newmarket Derby ..	— —	— —	Burgley, Stamford .. Yardley, near Birming ..	C. Young	16 gr. 10 gr.	
Knights of the bay ..	bay	10	by the Knight of St. Patrick, out of Besika, by .. Beirum	started 12, won 3 .. —	— won Newmarket Derby ..	— —	— —	Burgley, Stamford .. Yardley, near Birming ..	C. Young	16 gr. 10 gr.	
Kn. of the Thistle	chestnut ..	10	by the Knight of St. George, out of Ava, by .. Lanercost	started 6, won 2 .. —	— won Wothorpe Biennial ..	— —	— —	Yardley, near Birming .. Burgley, Stamford ..	— —	10 gr. —	
Knowsley	bay	9	by Stockwell, dam by Orlando .. by The Cure, out of Kipling, by Emilia ..	started 7, reed. fl. ran third for 2,000 gr .. started 36, won 104 ..	— ran third for 2,000 gr ..	— 1	— —	— —	— —	— —	— —
Lambton	bay	18	by The Cure, out of Kipling, by Emilia .. by The Cure, out of Kipling, by Emilia ..	started 36, won 104 .. —	— won York County Plate ..	— 57	— —	— —	— —	— —	— —

bay ..	9	by Stockwell, out of Gale, by Touchstone...	10, won 4	won 300, Newmarket...	untried.	---	Kirkington, Carlisle ..	7 gr., h. b. 3 gr.
brown ..	13	by Sir Hercules, out of Yard Arm, by Sheet...	started 10, won 4	won Metropolitan Stakes	10	Guardman ..	Mr. Phillips ...	30 gr.
...	15	by The Little Known, out of Flora Hastings, by never appeared ...	---	---	1	Lord Hastings ..	10 gr., h. b. 5 gr.	
chessnut	11	by Stockwell, out of Ennui, by Ray Middleton started 30, won 5	won mitch 21000, Newmkt.	untried.	---	Whitwell near Clitheroe ..	10 gr., h. b. 5 gr.	
chessnut	8	by Newminster, out of The Slave, by Mel. started 18, won 7	won the St. Leger	untried.	---	Croft Stud Farm, Delington ..	19 gr. Fall.	
bay ..	16	by Touchstone, out of Fair Helen, by Pantaloon started 10, won 4	won 9000 gr. Stakes ...	94	Dundee	Moortlands, Shelton, York ..	30 gr., h. b. 10 gr.	
black ..	12	by The Confessor, out of Julia, by Jerry	started 17, won 3	won Oxford Stakes	untried.	Rusley, Hungerford ..	8 gr., h. b. 5 gr.	
bay ..	15	by Sweetmist, out of Mulligatway, by Econo- started 4	---	---	9	Oxington, Wellingford ..	5 gr., h. b. 3 gr.	
bay ..	8	by Sweetmist, out of Jocose, by Pantaloon ..	started 9, won 7	won the Derby	untried.	Lagan Hall Stables ..	30 gr. Fall.	
bay ..	6	by Lord of the Isles, out of Miss Anne, by The ..	---	---	---	Naaham, Darlington ..	3 gr.	
chessnut	7	by Grosvenor, out of Celerity, by Sleight-of- started 18, won 1	won the Ascot vase	untried.	---	Dorrahney, Portunna ..	7 gr., h. b. 4 gr.	
bay ..	11	by Kingston, out of Paradigm, by Paragon ..	started 55, won 7	won St. Leger	untried.	The Rookery, Clapham ..	10 gr.	
bay ..	8	by Ivan, out of Coquette, by Napier ..	started 3, won 1	won 2300 at Curragh ..	untried.	Alrediston	5 gr.	
bay ..	11	by King Tom, out of Blister, by Ray Mid- started 10, won 3	won 2500 at Stockbridge ..	untried.	---	Staten Farm, Middlem, Ok.	10 gr., h. b. 5 gr.	
bay ..	9	by Stockwell, out of Chinzelli, by Touchstone started 8, won 7	won the St. Leger	9	Lady Seaham ..	Bellus, Romford ..	30 gr.	
chessnut	20	by Birdcatcher, out of Ellen, by Birdcatcher, started 26, won 13	won the Angles	4	Princess Royal ..	Dringhouses, York ..	5 gr., h. b. 3 gr.	
chessnut	17	by Orlando, out of Mallbran, by Whisker ... started 7, won 3	won July Stakes	28	Viridis	Leggan Hall, Ireland ..	50 gr.	
grey ...	14	by Fauch-a-Ballagh, out of Victorine, by started 7, won 3	won 2480 (b) at Newton ..	3	Prima Donna ..	Cobham, Surrey	10 gr., h. b. 5 gr.	
chessnut	7	by Teddington, out of Energy, by Weatherbit, started 33, won 8	won in all 25,000	untried.	---	Solmuda, Clonsilla ..	7 gr. Fall.	
brown ..	14	by The Cure, out of Theano, by Waverley ... started 11, won 3	won the Nursery	3	Lord Conyngham ..	Mountainstown, Meath ..	3 sovs.	
bay ..	13	by Melbourne, out of Emerald, by Defence ... started 34, won 11	won the Prendergast ..	3	Sweet Home ..	Hampton Court	10 gr.	
chessnut	31	by Slane, out of Semleria, by Voltaire	started 21, won 10	won Ascot Vase	19	Richmond, York	16 gr.	
chessnut	7	by Rataplan, out of Manganesa, by Birdcatcher started 13, won 3	won St. Yorkshire Stakes ..	untried.	---	Low-street, Bedale ..	10 gr.	
chessnut	7	by King Tom out of Moonshine, by Orlando ..	started 13, won 3	won 2376 at Newmarket ..	---	Water Tower Farm, Raby ..	8 gr., h. b. 4 gr.	
bay ..	15	by Gemma di Vergy, out of Pricores, by Het- man Platoff	---	---	---	Messrs. Walker ..	5 gr., h. b. 3 gr.	
bay ..	9	by King Tom, out of Moonshine, by Orlando started 11, won 1	won a hurdle race at Worcester	untried.	---	J. Southcott	5 gr., h. b.	
bay ..	17	by Touchstone, dam by Lanercost	started 24, won 8	won 200 at York	1	North Grimston, Malton ..	5 gr., h. b.	
bay ..	7	by Teddington, out of Sabra, by Pantaloon ... started 119, won 3	won the Brighton Cup ..	---	---	Burgh-by-Sands, Carlisle ..	5 gr., h. b. 3 gr.	
bay ..	20	by Cothertone, out of Victorine, by Speculation never appeared ..	---	---	---	Harleston, Northampton ..	30 gr.	
Naseby National Guard	8	by Riffeman, out of Lady Elizabeth, by Sleight started 10, won 2	won 2300, at Beverley ..	untried.	---	Swalcliffe, Banbury ..	10 gr., h. b. 5 gr.	
Naseby	13	by Newminster, out of The Jewess, by Jacques started 26, won 9	won 2180 (b) Newmkt.	untried.	---	Newbigin, Beverley ..	7 gr., h. b. 2 gr.	
Neophyte	9	by Weatherbit, out of Athena Pallas, by Bird- started 17, won 5	won 5000 Guineas, York ..	1	Beresinailly ..	Rawcliffe	5 gr., h. b. 2 gr.	
Neptunus.....	17	by Napier, out of Sally Snobs, by Sandbeck ..	started 16, won 7	won 600 Northern Hand.	20	Fairfield, York	10 gr., h. b. 5 gr.	
Neville	13	by Newminster, out of Mary Alabalia, by Mal- started 34, won 16	won 1000 Doncaster Cup ..	11	Honest John ..	Swalcliffe, Banbury ..	16 gr., h. b. 9 gr.	
Nevinsale	20	by Touchstone, out of Beeswing, by Dr. Syntax ..	started 10, won 9	won the St. Leger	189	Park Paddock, New ..	15 gr.	
Newcastle	13	by Pyades, out of Charlotte, by Redbank ..	started 31, won 17	won the Critérium	13	market ..	Full.	
North Lincoln ..	9	by Kingston, out of Athol Brose, by Orlando ... started 4	third for 21,000	untried.	---	Rawcliffe, York	25 gr.	
Nottingham ..	15	by Kingston, out of Athol Brose, by Orlando ... started 4	third for 21,000	untried.	---	Meash, Weatherby ..	15 gr., h. b. 3 gr.	

STALLIONS FOR THE SEASON, 1868—(Continued).

Name.	Age.	Pedigree.	Performance.	No. of winners out by.	Sire of	Standing at	Apply to	Price.
Rubourne.....	11	by Nabob, out of The Princess, by Merry Monarch	started 3, won 2	5	Zenobia.....	Ravcliffe.....	Mr. Martin....	15 gr., h. b. 3 gr.
Oberon.....	10	by Tadmor, out of Water Lily, by Touchstone	started 48, won 7	untried.	—	Hasketon, Woodbridge J. Smith.....	—	5 gr., h. b. 3 gr.
Old Trick.....	14	by Slight of Hand, out of a Hampton mare started 84, won 30	started 84, won 30	untried.	—	Willoughby, Grantham Mr. Garner.....	—	5 gr., h. b. 3 gr.
Orest.....	11	by Orestes, out of Lady Louisa, by Touchstone never trained....	never trained....	4	Skipper.....	Bennington, Stevenage W. Heath.....	—	10 gr., h. b. 3 gr.
Oulston.....	16	by Melbourne, out of Alice Hawthorn, by Touchstone never trained....	never trained....	11	Russley.....	Newmarket.....	Messrs. Barrow..	15 gr., h. b. 3 gr.
Outeast.....	11	by Volteiger, out of The Gem, by Touchstone..	started 37, won 6	—	Student.....	Curragh, Kildare....	—	4 gr., 34 gr.
Oxford.....	11	by Irish Birdcatcher, out of Honeydew, by Touchstone..	started 9, won 2	0	—	Yardly, Birmingham ..	C. Young.....	30 gr.
Parnesh.....	11	by Plenipotentiary.....	started 28, won 10	8	Ravioli.....	Rufford Abbey, Ollerston	Mr. Coates....	7 gr., h. b. 5 gr.
Peon.....	13	by Sweetum, out of The Bloomer, by Melbourne started 3.....	started 3.....	untried.	—	Blackney, Lincoln....	Mr. Bartholomew	10 gr.
Plum Pudding.....	11	by Alarm, out of Repentance, by Annadale started 16, won 6	started 16, won 6	8	Indigestion.....	Sutton Place, Guildford	—	5 gr.
Pontifex.....	21	by Sweetstone, out of Fionella, by Birdcatcher started 3.....	started 3.....	7	Flash in the Pan	Palmerston Newry....	Mr. Webster....	5 sovs., h. b. 2 sovs.
Porto Rico.....	15	by Touchstone, out of Crucifix, by Prim.....	never appeared ..	6	Barnabo.....	Kilmaclack, Limerick	—	5 sovs., h. b. 2 sovs.
Prince Minster.....	20	by Orlando, dam by Bay Middleton.....	started 17, won 8	44	Mr. Pitt.....	Highfield, St. Albans..	Stud groom....	13 gr., h. b. 6 gr.
Prince Plunket.....	10	by Melbourne, out of Pantaloon, by Pantaloon started 31, won 8	started 31, won 8	untried.	Vani.....	Willesdon Park, Kilbrn.	Mr. C. Phillips..	25 gr.
Ranger, The.....	13	by Jericho, out of Glee, by Touchstone.....	started 11, won 3	16	—	Alvedon.....	Stud groom....	15 gr.
Raparee.....	10	by King Tom, out of Longitude, by Inheritor started 17, won 9	started 17, won 9	5	Leases.....	Rufford Abbey, Ollerston	Mr. Wilson....	10 gr., h. b. 5 gr.
Rataplan.....	18	by Ratsaplan, out of Lady Alicia, by Melbourne started 30, won 5	started 30, won 5	50	Kettledrum.....	Harleston, Northampton	Mr. Wilson....	40 gr.
Rattle.....	18	by The Baron, out of Pombonias, by Glencoe started 21, won 49	started 21, won 49	18	Longdown.....	Tickhill Castle Farm ..	W. Horshaw....	10 gr.
Rattlebone.....	11	by Crutcher, out of Wicket by Stumps.....	started 28, won 6	9	Chickens Hazard	Lynton, Hants.....	H. Thorn.....	10 gr.
Redoubt.....	6	by Artillery, dam by Blackfoot.....	started 5, won 2	untried.	—	Newmarket.....	Messrs. Barrow..	5 gr., h. b. 3 gr.
Robin.....	6	by North Lincoln, out of Blooming Heather, by Glencoe started 11, won 3	started 11, won 3	untried.	—	Monkton, Swindon....	Mr. H. Brown..	6 gr., 4 gr.
Roebuck.....	21	by Chatham, out of Margarine, by Little John started 17, won 5	started 17, won 5	18	Cowley.....	Rockview, Reckton....	—	5 gr., h. b. 3 gr.
Roman Bee.....	8	by Mountain Deer, out of Marchioness of Eu, started 3.....	started 3.....	untried.	—	Water Tower, Rugby ..	Walker & Watson	5 gr., h. b. 24 gr.
Ronulus.....	10	by Artillery or Irish Birdcatcher, out of Queen started 7, won 3	started 7, won 3	untried.	—	Knocklong, Ireland ..	Capt. Gubbins..	34 sovs.
Rose Dragon.....	10	by The Flying Dutchman, out of Priestess.....	started 1, won 1	3	Numa Pompilius	Rahen, Monteth.....	—	15 gr.
Seacharoneaster.....	6	by Windhound, out of Paradigm, by Paragon started 7, won 1	started 7, won 1	untried.	—	Alford, near Chester ..	Mr. T. Parker....	15 gr.
Saunterer.....	14	by Sweetum, out of Derivation, by Iago.....	started 54, won 24	17	Zambesi.....	Newmarket.....	West Barrow....	10 gr.
Savarnake.....	6	by Irish Birdcatcher, out of Ennui, by Bay started 54, won 24	started 54, won 24	untried.	—	Stanton, Shifnal.....	Mr. Byas.....	10 gr.
Scandal.....	13	by The Cure, out of Prudery, by Lanercost.....	never appeared ..	3	Slidewind.....	Middle Park, Eltham....	Mr. Bealton....	80 gr.
Scotch Chief.....	7	by Lord of the Isles, out of Miss Ann, by The started 7, won 4	started 7, won 4	untried.	—	Hampton Ct. Paddock	Mr. Scott.....	5 gr., h. b. 24 gr.
Sellin.....	5	by Ivan, out of Light of the Harem, by Magpie started 80, won 13	started 80, won 13	untried.	—	Fairfield, near York ..	T. Parrington ..	5 gr., h. b. 3 gr.
Sharper, The.....	5	by Ellington, out of Overreach by I. Birdcatcher started 9, won 4	started 9, won 4	untried.	—	Croft, Darlington....	Mr. Winteringham	5 sovs., h. b. 2 sovs.
Simple Simon.....	11	by Woodpigeon, out of Nicotiae, by Ion.....	started 16, won 4	3	Simple Maid.....	Cleomelah, Carlou....	—	5 gr., h. b. 3 gr.

Sir John Bailey corn	19	by The Baron or Israel, out of Lovellip, by Camel	by started 4, won 0	2nd Prize at Royal Show	3	Baron of Aven...	Stennett, Henley-on-Thames	Mr. T. Hussey	6 gs., h. b. 3 gs.
Spedding	7	by Toddington, out of Juanita Paves, by Melbourne	started 6 won 0	2nd for Chesterfield Cup	—	—	Kaighion, Radnor	Mr. Griffiths	10 gs., h. b. 3 gs.
Stirling	14	by Voltigeur, dam by Gardham	started 23, won 8	won Ascot Cup	18	Privateer	Rawcliffe, York	Mr. Martin	15 gs.
Stonstone	7	by Touchstone, out of Midam, by Malcom	started 40, won 14	won £260 at Worcester	untried.	—	Newmarket	Mr. Jarvis	10 gs.
Ston	7	by West Australian, dam by Birdcatcher	started 17, won 9	won £390 at Epsom	untried.	—	The Curragh	H. Stephenson	5 sovs.
Springwell	11	by Harrison, out of Julia, by Launcelet	started 8 won 5	won St. Leger	28	Julius	Burby, Castle Eden	W. Bont	50 gs.
St. Albans	11	by Stockwell, out of Bribery, by The Libel	started 8 won 5	won St. Leger	28	—	Hampdon Court	Mr. P. Stevens	7 gs., h. b. 3½ gs.
Stockinger	9	by Stockwell, out of Lady Evelyn, by Don John	started 64, won 17	won £665, Northampton	—	—	Bucknell, Salop	Capt. Gubbins	5 sovs.
Stockman	9	by Stockwell, out of Hybla, by The Provost	started 1, won 1	won £665, Northampton	—	—	Knoxy, Limerick	Stud Groom	5 sovs.
Stockwell	14	by Stockwell, out of Weatherbourn, by Weatherbourn	never appeared	—	—	—	Red Hill, Edgware	Stud Groom	5 sovs.
Stockwell	19	by The Baron, out of Pockahontas, by Gloucester	started 21, won 12	won St. Leger	157	Blair Athol	Hooton, Chester	John Griffiths	Full.
Sunderland	7	by Jeremy Diddler, out of Madeline, by Libel	started 85, won 12	won £540 (h) at Lincoln	—	—	Myton Grange, Borough	Mr. D. Scott	10 gs., h. b. 5 gs.
Surrey	23	by Touchstone, out of Crucifix, by Priam	started 16, won 9	won the Derby	58	Lady Clifden	Hastons, Woodbridge	Capt. Barlow	15 gs.
Sussex Stag	6	by Findon, dam by Fallow Back	never appeared	—	untried.	—	Kinnalock, Ireland	G. A. Harris	4 sovs., h. b. 2 sovs.
Sycophant	10	by Rataplan, dam by Tomboy	started 44, won 5	won Surrey and Middlesex	untried.	—	Wroughon, Swindon	J. Stinton	6 gs., h. b. 3 gs.
Stymont	6	by Vengeance, out of Midla, by Soutar	started 22, won 11	won £960 at Stockbridge	untried.	—	Whitchurch, Hants	R. Milton	6 gs., h. b. 3 gs.
Stymont	11	by Stockwell, dam by Red Hart	started 1, won 1	won the Derby	17	Plaudit	Wassand, Hull	Mr. Hockney	12 gs., h. b. 2 gs.
Thornaby	11	by Melbourne or Windhound, out of Alice	started 34, won 14	won the Derby	—	—	Croft, Darlington	Mr. Winteringham	50 gs.
Thunderbolt	11	by Hawthorn, by Muley Molech	started 30, won 18	won the Stamford Plate	8	Lady Heister	Sutton Place, Guildford	Stud groom	30 gs.
Tim Whittier	9	by Stockwell, out of Cordelia, by Red Deer	started 26, won 11	The Goodwood Cup	untried.	—	Croome, Worcester	W. Hadley	18 gs.
Tom King	5	by Van Galen, out of Sibi, by Ugly Buck	started 4, won 1	won a Queen's Plate at Curragh	—	—	Kathbridge	—	4 sovs., h. b. 1½ sovs.
Tom King	5	by King Tom, dam by Birdcatcher	started 4, won 1	won Newmarket Biennial	30	Lady Ellizabeth	Danebury, Stockbridge	J. Day	Full.
Tom King	12	by Orlando, out of Cavatina, by Redshank	started 40, won 13	won £585 (h) Goodwood	untried.	—	Croome, Worcester	W. Hadley	12 gs., h. b. 8 gs.
Tom King	14	by Sarpedon	started 45, won 12	won Northamp. Plate (3)	4	Pervagues	Rawcliffe, York	Mr. Martin	10 gs.
Tom King	16	by The Cure, out of Contraction, by Emilius	started 21, won 7	won Cesarewitch	13	Sidmonton	East Acton, Middlesex	Mr. Donald	10 gs.
Tom King	9	by Vinder, dam by The Saddler	started 6, won 1	won Hunt Cup at Ascot	untried.	—	Kinnalock, Limerick	Mr. Martin	4 sovs., h. b. 3 sovs.
Tom King	9	by Newminster, dam by Scroggins	started 10, won 6	won Nursery Stakes	untried.	—	Rawcliffe, York	Mr. Martin	10 gs.
Tom King	21	by Voltairs, out of Martha Lynn, by Mulatto	started 11, won 5	won the Derby	129	Buckstone	Middlethorpe, York	Mr. Smallwood	20 gs.
Tom King	7	by Voltigeur, out of Heroine, by Neauman	never appeared	—	—	—	Addington, Croydon	Mr. Walker	3 gs.
Tom King	16	by Collingwood, out of Flash of Lightning, by Voltigeur	started 26, won 11	won £200 (h) at Chester	1	Comberton	Pershore	W. Mason	10 gs., h. b. 3 gs.
Tom King	15	by Birdcatcher, out of Elphine, by Emilius	started 19, won 6	won St. Leger	19	Puritan	Wentworth, Rotherham	Mr. Oates	15 sovs.
Tom King	9	by Fazeletto, out of Add Acquaintance, by Irish Birdcatcher	started 23, won 4	won Coffee-room Stakes, Newmarket	—	—	Kilfield, York	R. Gill	10 gs.
Tom King	15	by Ion, out of Ellen Middleton, by Bay Middleton	started 4, won 3	won the Derby	63	Robin Hood	Chilton, Hungerford	Mr. Hodgson	40 gs.
Tom King	7	by Windhound, out of Fright, by Alarm	started 38, won 10	won £670 (h) at York	—	—	Rawcliffe Paddock	Mr. Martin	10 gs., h. b. 5 gs.
Tom King	9	by King Tom, out of Incumbent, by The Cure	started 23, won 13	won Woodcote Stakes	untried.	—	Clumber, Worsop	Mr. W. Scott	12 gs., h. b. 5 gs.
Tom King	11	by Newminster, out of The Bee, by Gladiator	started 14, won 5	won £103 at Heath	3	Honesty	Rockavage, Louth, Irid.	—	3 gs.
Tom King	11	by The Flying Dutchman, out of Whib, by Touchstone	never appeared	—	—	—	Catterick	Mr. Bennison	10 gs., h. b. 5 gs.

The Groom's Fee, if not included, varies from a Guinea to Half-a-Crown.

FOREIGN AGRICULTURAL GOSSIP.

The French Minister of Agriculture has addressed a somewhat remarkable report to the Emperor Napoleon on the food situation of France. The Minister says: "Since the insufficiency of the last harvest was made apparent, the Government of your Majesty has hastened to take the necessary measures in order to remove its effects. The first and most important of these measures was the suppression of the surtax on the flag levied on grain and flour introduced into France by foreign ships. This suppression, provisionally authorised by a decree of your Majesty dated Nov. 13, 1867, has had the consequences anticipated from it. Thus, to cite only one example, the port of Marseilles, which serves as the *entrepôt* for the greater part of the imports of cereals, received during the two months preceding the execution of the decree only about 280,000 hectolitres of grain imported by foreign ships; while in the two following months this total rose to rather more than 1,050,000 hectolitres. At the same time that it occupied itself with the task of facilitating arrivals by sea, the Government neglected no means of stimulating the conveyance of grain on the railways. Thus, on the invitation of the Government, the French companies sent into Germany all the plant which they had at their disposal, so as to bring Hungarian wheat into France across the land frontiers. These deliveries of plant have now ceased—the waggons of the German railways suffice to meet the exigencies of the traffic, and transports have resumed their regular course. Thanks to the various measures taken, we have been enabled to receive from the close of last harvest to the end of February 572,000 tons of wheat or flour, representing nearly 7,500,000 hectolitres. It became necessary to spread these supplies over all points of the territory, and to establish as much as possible an equilibrium between the different markets, which in the eastern district present now prices ranging from 28 francs to 30 francs per hectolitre, while the corresponding prices in the centre and south-west amount to 34*f.* and 36*f.* per hectolitre. A reduction of railway tariffs could alone bring about the desired result. The Government had required from the railway companies the execution of the proviso in the *cahier des charges*, by virtue of which the tariff to be charged for the conveyance of cereals is restricted to a maximum of 7 cents. per ton per kilometre—exceptively to 10 cents. per ton per kilometre in the case of the Western of France Company—when the price of wheat attains 20*f.* per hectolitre on certain controlling markets. But in presence of the unequal distribution of the supplies of cereals, I have asked the companies by order of the Emperor, to agree to reduce their tariffs below the limits prescribed by their acts of concession. It was especially desirable that an agreement should be established between the companies for the adoption of a common tariff applicable for the conveyance of cereals on all the networks indiscriminately; and the various complaints addressed to the Government showed the importance which the grain trade and the populations interested attached to the adoption of a tariff which would be uniform for all France, and which would be everywhere equally reduced according to the length of the distances traversed. I am pleased to recognise the fact that I met with the most ready assistance from the companies; and I proceeded on their propositions to sanction a tariff of 6 c., 5 c., 4 c., and 3*f.* c. per ton per kilometre, according to the distances traversed. This tariff, which for the greatest distances makes a reduction of 50 per cent. on the rate of 7 cents., fixed as the maximum in case of a prevailing dearth of grain, will have the double advantage of offering exceptionally moderate rates, and of presenting at equal distances equal advantages for all the points accommodated by our iron ways. It has been distinctly understood at the same time that these reductions of rates freely consented to by the companies are to be regarded as essentially temporary, and they will cease with the cessation of the state of things which gave rise to the change made. With this object, I think it right to propose to your Majesty to follow the example of what was done under similar circumstances in 1853, and to decide that the companies shall

be authorized, after a minimum period of four months, to raise the rates which they have voluntarily reduced." The Emperor has decreed as proposed by the minister.—On the occasion of the twelfth birthday of the Prince Imperial, a number of nominations were made in the Legion of Honour. There were no decorations given for services rendered to agriculture; but among 92 mayors named Chevaliers of the Legion, there were several cultivators of the soil, the title of "cultivator" figuring in their statements of services rendered. A congress of delegates of French learned societies will commence its sittings April 20, and the proceeding will extend over five days. The programme of the agricultural questions, which it is proposed to treat, is almost entirely devoted to agricultural topics. The questions to be handled comprise the following: "What has been the progress of agriculture in 1867? If a superior school of agriculture should replace that of Grignon, what should be the conditions of its existence? Where should it be placed, and how should the system of instruction be constituted? What changes should be introduced into the theoretical and practical instruction of the district and farm schools? What greater part should agricultural societies and associations take in the direction of primary agricultural instruction? How might the private initiative and action of agricultural societies be developed and strengthened? Would it be possible to give by this means a new impulse to production and to the progress of agriculture? Are the solutions proposed by the commission charged with the task of studying the question of agricultural instruction satisfactory from every point of view? What might be added to them? What purpose is served by exhibitions of fat stock? Is it not time to suppress them, in order to replace them by other encouragements? What are the works which would enter most usefully into the composition of a rural library of fifty volumes? What are those which might be selected for a rural library of a hundred volumes?" Whatever may be the decision of the congress upon the question put to it with reference to exhibitions of fat stock, it is not the less true that the number of those exhibitions does not decline. Thus, there recently took place at Cognat-Lyonne in the Allier, an important fair to which was annexed, thanks to the initiative of the Marquis de Montlaur, an exhibition for fat stock belonging to proprietors of the canton of Escarolles. The Marquis warmly appealed to the cultivators assembled on this occasion to direct all their efforts to the production of meat. "It is there," he said, "that we must seek for the future prosperity of our agriculture; for the farther we go, the more the necessity of producing meat will make itself rigorously felt. This necessity is the consequence of that great current, indicated by all statistics, which bears the inhabitants of the country districts towards the towns. The culture of cereals involves a considerable supply of labour; while the breeding and grazing of cattle is carried on at little expense; so that in this direction, and there is no reason to be astonished at it, all our efforts are tending. The task is a difficult one; but all France wishes it success; and when we recollect with what ordinary animals, of deplorable conformation, our markets were supplied fifteen years since, we may recognize the fact that we have made a great step forward in the difficult art of grazing." If cattle have been greatly improved in France during the last fifteen years, it may, perhaps, be fairly urged that the fat-stock shows have had something to do with the improvement; and if so, the moment does not appear to have yet arrived for their suppression, although possibly their programmes might be advantageously modified.—A sale of Dishley, New Kent, and Anglo-merino rams, will take place April 14, at the imperial sheepfold of the Haut-Tingrey, near Samar, in the Pas-de-Calais. Under the influence of a series of warm, moist days, vegetation has made of late rapid progress in France; and the fields, which do not appear to have been hardly treated by the winter, are becoming green. It is to be feared that the legions of insects, which inflict so much injury upon the farmer, will soon make their appearance; and it is for agriculturists to follow the minute instructions laid down

by prefects—nothing is too great or too small for a French prefect—and to declare an inveterate war against their small tormentors. The department of the Seine-et-Marne purposes to include in its budget a sum of £80 for the purpose of granting small subventions to local societies which may be formed for the purpose of securing the destruction of certain insects. While the prefects are giving excellent advice in the matter of serious insect destruction, the Minister of Agriculture, ad-

dressing himself to the prefects, has been asking whether the epizootic diseases, which at different periods have declared themselves in many parts of France among poultry, have carried off a great number of birds. "These ravages," adds M. de Forcade, "have been from time to time reported to my administration, and it does not appear that any efficacious remedy has yet been found against their development."

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR MARCH.

The weather having been remarkably fine for the time of year, all outdoor farm labours have progressed rapidly. Most of the Lent corn has been sown in our forward districts; and the accounts from all quarters in reference to the appearance of the winter wheats are very favourable. So far, therefore, there is every prospect of an increased yield of wheat this year, more especially as the breadth of land under cultivation has considerably increased. Much, however, has yet to be done to reduce the quotations below their present level, notwithstanding that there is every prospect of full average importations this year. The whole of the foreign supply will be required for home consumption, owing to the limited quantities of English wheat now in stock, and the inferior condition in which the supplies are coming to hand. During the month there were unusually heavy arrivals of wheat off Falmouth and Queenstown, and yet they had very little effect upon the quotations. Out of the quantity reported about 130,000 qrs. were taken for France, Holland, and Belgium, the remainder chiefly for consumption in the north of England. Fortunately, large quantities of wheat are still held in the South of Russia, as well as in the United States, but at prices which render speculation somewhat dangerous. The wheat trade, as a whole, has been very inactive; nevertheless the fluctuations in prices have been trifling.

There has been only a moderate inquiry for barley and all other kinds of produce; and, in some instances, the quotations have had a drooping tendency.

The transactions in wheat and spring corn in the continental markets have been only moderate, at about stationary prices. Great complaints exist in France of the extreme scarcity of wheat in most of the Departments.

The exports of grain and flour from America have not increased. The prices demanded by the holders have been too high for shippers to this country.

There has been a decided improvement in the wool trade. The public sales of colonial wool held in London have gone off freely, owing to the large purchases made for the continent; and the quotations have advanced 1d. to 1½d. per lb. English wool has been largely dealt in by our manufacturers, at ½d. to 1d. per lb. more money. Very large quantities of colonial wool are expected to arrive for the May-June sales, which, no doubt, severely test market values.

Large supplies of potatoes have been brought forward in very middling condition. Good and fine samples have been in fair request, at from 150s. to 170s. per ton; but inferior parcels have met a dull inquiry, at previous rates. For the time of year the imports from abroad have been rather extensive.

The supplies of hay and straw have been seasonably good; sales, therefore, have progressed slowly. Meadow hay has sold at £2 15s. to £4 4s.; clover, £3 5s. to £5; and straw, £1 10s. to £1 16s. per load.

We have to report a moderate demand for good and fine hops at full quotations; but all other kinds have moved off heavily at barely stationary prices. The imports from the Continent have been on a fair average scale.

As regards the seed market, we may observe that tares, owing to the close of the sowing season and the heavy imports of foreign, have given way fully 2s. per bushel, and that cakes have commanded very little attention.

Only limited supplies of wheat have been on offer in the Scotch markets. The trade has continued in a most inactive state, at prices barely equal to the previous month. The transactions in spring corn, flour, and meal have fallen off.

In Ireland, all descriptions of produce have changed hands slowly; nevertheless, no change of importance has taken place in prices. The exports to England have been only moderate.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that there has been a considerable increase in the supplies of home-fed beasts on sale in the Metropolitan Cattle Market, and that the quality of most breeds has been very good, the beef trade has ruled firm, and the quotations have had an upward tendency, the best Scots and crosses having realised 5s. per 8lbs.

The arrivals from Scotland have been large and of prime quality. Those from Ireland, however, have been limited, and mostly in poor condition. The foreign imports have been comparatively trifling.

The numbers of sheep brought forward have been seasonably good; nevertheless, the best Downs and half-breeds have advanced 4d., long-wooled sheep 2d. per 8lbs. The top quotation for the former, in the wool, has been 5s. 4d.; out of the wool, 4s. 8d. per 8lbs. The general quality of the sheep has been very good.

Lambs have come to hand somewhat freely. The demand for them has ruled steady, at from 32s. to 40s. each.

Prime small calves have been scarce, and in request, at full quotations; but inferior qualities of veal have met a dull inquiry.

We have very little change to notice in the value of pigs. For the most part, sales have progressed slowly.

The month's imports of foreign stock into London were as follows:

	Beasts	Sheep	Calves	Pigs	Head.
	3,713
	7,437
	1,096
	91

Total 12,337

Imports at corresponding periods:

	Total
1867	34,700
1866	51,869
1865	25,719
1864	13,104
1863	15,644
1862	6,259
1861	9,091

The total supplies of stock brought forward were:

	Beasts	Cows	Sheep	Calves	Pigs	Head.
	20,380
	160
	127,260
	1,146
	2,270

COMPARISON OF SUPPLIES.

March.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1867	14,460	130	95,600	1,100	1,800
1866	15,511	60	117,550	1,075	2,205
1865	22,400	577	86,752	1,142	3,015
1864	21,500	513	91,890	1,218	2,690
1863	18,633	501	88,560	935	2,432
1862	18,200	500	83,040	881	2,810
1861	18,500	530	85,270	700	2,410
1860	18,160	495	93,409	853	2,042
1859	16,810	612	94,775	695	2,890
1858	17,821	476	74,410	704	1,915
1857	17,345	490	74,880	1,118	2,330

The principal receipts comprised 9,100 Scots and shorthorns from Norfolk, Suffolk, Essex, and Cambridgeshire; 2,690 various breeds from other parts of England; 2,224 Scots and crosses from Scotland; and 790 cows, heifers, &c., from Ireland.

Beasts have sold at from 3s. 4d. to 5s., mutton 3s. 8d. to 5s. 4d., veal 4s. 2d. to 5s. 4d., and pork 3s. 4d. to 4s. 9d. per 8 lbs., to sink the offal.

COMPARISON OF PRICES.

	March, 1864.					March, 1866.					
	s.	d.	s.	d.		s.	d.	s.	d.		
Beef from	3	4	to	5	0	...	3	4	to	5	2
Mutton	3	8	to	6	0	...	3	10	to	6	9
Veal	4	0	to	5	4	...	4	4	to	5	6
Pork	3	6	to	4	6	...	3	9	to	4	4
	March, 1865.					March, 1867.					
	s.	d.	s.	d.		s.	d.	s.	d.		
Beef from	3	6	to	5	4	...	3	4	to	5	9
Mutton	4	6	to	6	8	...	3	10	to	6	9
Veal	4	6	to	5	8	...	4	6	to	5	6
Pork	3	6	to	4	10	...	3	8	to	4	2

Newgate and Leadenhall have been well supplied with meat. On the whole, the trade has ruled steady, as follows:—

Beef from 3s. 10d. to 4s. 6d., mutton 3s. to 4s. 6d., veal 3s. 10d. to 4s. 6d., pork 3s. 10d. to 4s. 4d. per 8 lbs. by the carcass. About 200 tons of dead meat have arrived in the port of London.

The supply of winter food in most parts of the United Kingdom being very large, stock generally has fared remarkably well.

SOUTH LINCOLNSHIRE.

It has seldom been our pleasing duty to report a season so fine and open as the present at this early period of the year. All our farm work is unusually forward. Potato planting is general, and all goes in satisfactorily. We never saw the land work more kindly: the planting is proceeding rapidly at very little cost of horse labour, and a large breadth will be put in. One of the modern ideas respecting potato planting is, that the land should not be worked up to a fine highly comminuted tilth, but should be a mingling of rather small "chequary" clods with a finely pulverized soil. It is in this state of tilth that we are now planting our potatoes. The manuring consists, first, of rich fold-yard dung alone; second fold-yard dung and 2 cwt. Peruvian guano and superphosphate, equal parts, mixed, and sown down the rows; third, fold-yard dung and 3½ cwt. superphosphate sown; fourth, 5 to 6 cwt. of Peruvian guano and superphosphate, equal parts, mixed, and sown either on ridges or every third furrow. The most popular application is the fold-yard dung and superphosphate. Rich fold-yard dung and Peruvian guano appear to yield ammoniacal constituents in excess. Good-sized sets are generally planted. We never saw the turnip crop at this season (March 19) in such a growing, forward state; some of the common varieties are knotting for flowering, and swedes are throwing out large shoots. We are running skeleton ploughshares under them, to prevent their growth. Keeping is abundant. The grass fields which have been "laid in" are looking well, almost "bullock pastures." Our spring crops have gone in nicely, and many peas are making their appearance. The wheat plant is by no means forward: all looks full and good; but considering the season, it must be pronounced backward. We have in some bygone years known it so forward as almost "to cover a hare" at this time. The Fens show the best plant. Sheep have not wintered well on our grass lands. The ewes are not in good condition, but the lambing season goes on prosperously; the fall of lambs a fair average. Our stock-yards are thinly stocked. Supplies must continue scant of our own growth. Beef and mutton maintain a satisfactory, but not high price. Pork is on the advance. Wool is more inquired for, and sales take place. Sheep are in good demand, and are likely to rise in price. We were such severe sufferers from cattle-plague in 1865-6, that we look upon the measures of Parliament for our future security with great interest. Some privation and inconvenience must be endured for our safety; besides, the losses sustained by meat producers fall with great force upon the public. We must have foreign cattle slaughtered at the port of debarkation, or from ten to twenty-one days' quarantine. Inspection is of no sure avail. Sheep, and even pigs ought to go into quarantine for a short time

under close inspection. No time should be lost. Much preparation will be requisite to secure safe quarantine grounds: it ought to be some isolated neck of land apart from a grazing country.

EAST GLOUCESTERSHIRE.

The month of February would seem everywhere to have been most favourable for field culture. The planting of wheat, beans, and peas was certainly never done better, or with a fairer prospect of a crop. Some little barley has been sown on early land, but as a good deal of rain has fallen since the commencement of March the land is much too wet and cold for planting. Wheats are generally most promising, and not too forward, but within the last week they have begun to look speary and weak on some clay soils. Dry weather and the hoe may, however, do much to improve them. Beans, vetches, rye, oats, and some autumn-planted peas are looking well; and as the season seems much more inclined to be windy and boisterous than frosty, it is more than probable we may have an early spring, and it is to be hoped, an early and productive harvest too. Grass lands and clovers have as good a face as we ever saw, and we have heard of fewer failures of clovers and artificial grasses than usual; so that, on the whole, a bright prospect would seem to be "looming in the future." Judging, too, by the short lists of spring sales advertised in the county papers, there are comparatively few farms changing hands, which is always a healthy sign. The sales and fairs which have already taken place have been remarkably well attended, with a sound healthy trade; indeed, the dulness which prevailed amongst sheep some five or six weeks ago seems to be gradually disappearing, and much better prices are being made. Wools are very much more in request, and the countenances of buyers bear a far more cheerful appearance than they have for many months past. Some farmers are asking 1s. 4d. to 1s. 6d. per lb., but can hardly obtain it. The pig trade has at length taken a turn in the favourable direction, and both fat and store hogs are fetching much higher rates. Good cart horses are in demand; but, as every kind of work is forward, the trade is not as brisk as we have seen it in some previous years. Really good hacks and cobs are difficult to find. The subject of wages paid to agricultural labourers in this county has lately been somewhat prominently brought before the public, and some ill-feeling engendered; but now that all parties have had their say, we trust they will be satisfied that we in Gloucestershire are paying our people fair and reasonable prices, and that we do not grind down the poor man to 9s. per week. We have taken some pains to inquire into this matter, and find that the more general wages are from 10s. to 12s. and 14s. per week; and when it is remembered that women get 10d. to 1s. per day, and perhaps two or more boys of the same family are earning 7s., 6s., or 4s. per week each, with beer or cider, these united earnings will contrast most favourably with those in towns, and prove the truth of Sir Lytton Bulwer's maxim, "Not so bad as we seem."—March 20.

RENFREWSHIRE.

We have experienced very wet weather here since the beginning of January, so much so that we have scarcely had fourteen dry days since the New Year. Many farmers are actually idle, the land being so soft as to render it an impossibility to do anything. Growth is far advanced for the season: we have no recollection of seeing the hedgerows so green so early as they have been this season. Pastures are also wonderfully fresh, and if not checked by frost, grass will be unusually early. Wheat is looking uncommonly well; hay and straw still sell high, although the price of hay has rather receded, the contrary generally being the case at this advanced period of the season. Hay is from £6 to £6 10s. per ton, straw £4 10s., and potatoes of good quality bring 27 per ton, which is an extraordinary price. Cattle of all kinds very dull of sale, owing to the high price of keep; milch cows down from £4 to £3 a head to what they were this time twelvemonth.—March 15.

CORK COUNTY.

Although the winter months are now past, and spring itself pretty well advanced, we have literally had no winter yet, the weather during the past four months having been wonderfully mild and fine, November and December were very fine months

and field labour suffered no interruption. The beginning of January was also very favourable for out-door work, but the latter half the month was for the most part stormy and wet, no cold however being experienced. The temperature of February partook more of the character of summer than of early spring, and vegetation made rapid strides, almost too much so indeed for its future safety. March, up to the 16th, has been rather wild and unsettled, and a good deal of rain has fallen, putting a complete stop to the planting of the crops, and hindering farm-work in general; fine weather has again set in however, and farmers have once more resumed operations. The same mildness which has characterised the whole season still prevails, frost, snow, and aleety or hail-showers being things only to be remembered or spoken of, but to all appearance not to be realised, a state of matters which suits all classes of the population, but few being found to regret the absence of frost and snow. We scarcely recollect a year when growth was so forward at such an early period as the present: pastures are beautifully green, and where they have not been over-stocked during the winter, there is a very fair bite for stock, particularly sheep. In the garden, gooseberry-bushes are in full leaf, and show abundance of fruit; and peaches, plums, and pears on the open wall are in full flower. The buds of deciduous trees are swelling fast, the horse-chestnut, in warm situations, having its leaves fully expanded, and the sycamore and a few others seem about to follow suit. The woods echo with the "wood notes wild" of numerous feathered songsters, and thus by both the vegetable and animal kingdoms Nature again proclaims the return of spring. The first sowing of spring corn began shortly after the middle of February, leys working at that time as kindly as could possibly be desired, finishing off with a fine skin, and being quite dry enough to roll immediately. Potato-planting began even earlier, farmers in the neighbourhood of towns, and who have consequently a good market for them, doing their very utmost to plant early. The lazy-bed system which prevails so much here answers admirably for early planting; when grown by this method this crop is often the first after grass, and when the field is at all sloping a few hours' drought brings the soil into a sufficiently dry state to enable it to be worked. The cultivation of the potato in "beds" is exceedingly simple, but entails a vast amount of manual labour, every cultural operation having to be performed by hand. The ploughing is as light almost as it is possible to do it, taking only the skin of the grass. When the ploughing is finished, the soil is cut or rather hacked to pieces, and the seed is then planted. This operation is mostly performed by women, who attain a marvellous degree of expertness after a few seasons' practice. The planting of the seed is termed "sticking," and is done by thrusting one of the long-handled spades peculiar to the country a few inches into the soil, pressing it a little forward, and then dropping the "set" into the opening. When the spade is withdrawn, the earth falls back into its position, and the planting is done. The manure is now spread; and the furrows being softened with a skeleton-plough, the earth is further pulverised with the spade, and then thrown over the dung with the shovel evenly and smoothly, the beds when finished presenting a very nice and even handsome appearance. The earthing-up is done by again ploughing the furrows, working up and breaking the lumps with the spade, and then carefully spreading the loose earth amongst the growing plants with the shovel. The lambing season has been very favourable, and the number of deaths has been singularly small; the early growth of grass is greatly in favour of this description of stock, the ewes giving a far better flow of milk from grass than from any other kind of food that can be supplied to them. The mild winter has been peculiarly favourable to all out-lying stock, and such cattle are mostly in good condition; we saw last week about a score of three-year-old bullocks, shorthorns and crosses, which had not been in a house for a single night during the whole winter, and every one of the lot was in blooming condition, a good many of them indeed almost fit for the butcher; the consumption of fodder has been in consequence greatly checked, and stocks of hay are still large. The price of hay instead of rising as the season advanced has rather retrograded, the price now being from 60s. to 70s. per ton, just what it was last September. Hay being so plentiful in the south generally, the trade for store stock opened unusually early, Limerick men having bought very freely even as early as the end of January, and the prices given for strippers and other strong cattle were so

good as to induce many to sell at least three months earlier than usual. The trade in fat cattle was very sluggish during February, heavy bulls proving but a very poor speculation to those who fed them. On the whole, we have much to be grateful for, and with the flame of sedition nearly extinguished, we look forward, with God's blessing, to quieter times and increased prosperity.—March 21st.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BAKEWELL FORTNIGHTLY MARKET.—There was a very large show of cattle. Business on the whole was very heavy. Calving cows sold at from £15 to £23, calving heifers from £12 to £17, barren heifers from £11 to £13, barren cows from £9 to £17, stirks from £7 to £11, with good demand. Pigs a large show and good business done. Small Pigs from 15s., middling size from 25s., strong from 35s. to 55s.

BOSTON SHEEP MARKET.—There was a large show of sheep, but trade was somewhat dull, and late rates were not maintained. Fat sheep in wool made 7½d., clipped 6d. per lb. Hogs made from 38s. to 54s. a-head.

BRIDGNORTH FAIR.—There was a good show of cattle. The supply of sheep was very small. In the pig market some good stores were sold at from 24s. to 36s. each. Good cows for beef realized fully 7d. per lb. Cows and calves fetched from £13 to £17. Butchers bought fat calves at 7½d. per lb. Some Irish heifers sold at £5 each and upwards. Shropshire ewes fetched from 30s. to 37s. each. In the horse fair there was a larger show of animals than usual, but few very good ones, the best for agricultural purposes realizing from £23 to £35 each; hacks sold very cheap, but only a moderate amount of business was done.

CREDITON MONTHLY MARKET.—There was a good supply; bullocks sold at a lower figure than last month; sheep, on the contrary, sold at an advance; hogs sold at 7½d. and 8d. per lb. Beef 7d. to 8d., real 7½d. to 8d., mutton 7d., pork 7½d. to 8d. per lb., carcasses 10s. 6d. per score.

DARLINGTON FORTNIGHTLY MARKET.—There was a large show of lean cattle. The show of fat was rather smaller. A good business was done, especially among lean cattle, the prices of which tended upwards, as did the prices of best fat heifers, 3d. per stone advance being quoted for the last description. Best ox and heifer beef 7s. 6d. to 8s.; in some few cases 8s. 2d. was quoted; secondary 6s. 9d. to 7s. 6d. The show of sheep was not very large; best wethers sold at 8½d. to 8½d., secondary 6½d. to 7½d. per lb. Calves and pigs were a small show, and made previous rates.

DUMFRIES PORK MARKET.—The supply of carcasses was larger than on last market. The weather being frosty, the carcasses were in fine condition for curing, better than has been the case for two months past. There were very few prime carcasses of 12 to 15 stones weight, most of the pork being light weights, from 7 to 10 stones. For prime well-fed carcasses there was a brisk demand, at an advance of 1d. per stone on last week; but for light carcasses prices were in most cases no higher. Prices for best carcasses of average size were 7s. 1d. and 7s. 2d. per imperial stone, and in one instance 7s. 3d. Smaller carcasses from 6s. 6d. to 6s. 10d., coarse and extra large carcasses from 6s.

GLASTONBURY MONTHLY MARKET was well attended, and the sale was brisk. Cows and calves averaged from £9 to £17, and barreners sold at high prices. Beef, 10s. 6d. to 11s. 6d. per score; mutton, 7d. to 7½d. per lb. Store pigs were more plentiful than at the previous market, and were readily sold.

GLOUCESTER MONTHLY MARKET.—The supply of beef was large, and of good quality. Trade was brisk, and former prices were fully maintained. The number of sheep penned was very small, and prices advanced. There was a ready sale at these quotations: Beef from 7d. to 7½d., mutton from 7½d. to 8d. per lb. Pigs sold readily from 10s. to 10s. 6d. per score.

GRANTHAM FAT STOCK MARKET.—A very large supply of beasts and sheep, and good prices made. Beef 8s. 3d. to 8s. 6d. per stone; mutton, not clipped 7d. to 7½d., ditto clipped 6d. to 6½d. Pork 6s. 3d. A large number of sheep were sold by auction at good prices.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

We had some April weather on the opening of the past month, but it did not last, though now and then a spring day visited us in the midst of driving winds and hail, with more wet than expected. On the whole there has been very little interruption to field-work, and some spring corn of all kinds has been got well into the ground in many places, giving an aspect of earliness to the season. The wheat has weathered the changes well, and some fields look luxuriant, but the cold lately felt may give this forwardness a timely check. The difference in wheat prices this month has been 1s. to 2s. per qr. downwards, partly in consequence of good foreign supplies, and partly from the unusual openness of the season, as well as from the total abstinence from speculation, prices being about 14s. per qr. higher than they were this time last year. It has, however, happened of late that when our markets were at the dulllest they have been woke-up by renewed orders from France, which country, by the French minister's report, has already secured for itself about 2½ millions of foreign wheat towards its own deficiency; while a grant of two million francs has been proposed in the Chamber of Deputies towards the wants of the famished natives of Algeria. We ourselves have yet five months to run to the end of August, and our imports in the seven already past have amounted to five millions in wheat and flour out of the ten millions estimated as our wants; if this estimate be correct, the remaining five must be gathered at the rate of one million monthly—a matter which seems very doubtful, with the sharp competition of France and neighbouring countries. Neither Petersburg nor the Western canals will be well opened before May, and whether when open they will meet the united requirements of Europe remains to be seen; but we would hope for the best, or a time of much privation is before us. Egypt will this season do something, having resumed the growth of corn since the fall in cotton; and another source of consolation is found in the more liberal shipment of maize from America, which was the great stay of Ireland in the famine of 1847—consequent upon the failure of potatoes. But low prices before harvest are out of the question, and our fervent hope is that such a crop will be gathered generally throughout the world that the future supply of all nations will be a mere question of price. The following were the recent quotations at the several places named: Best French white wheat at Paris 83s. per qr., best red 80s.; at Courtrai, in Belgium, the top price was 80s.; at Liege, 77s. 6d.; high-mixed Polish at Amsterdam, 76s.; red at Hambro', 72s.; at Cologne, 69s. 6d.; at Frankfurt, 67s. 6d.; yellow at Mannheim, 66s.; Banat wheat at Pesth and Hungary, 49s. 6d.; 61lbs. red at Stralsund, 70s.; Marks at Stettin, 68s. 6d.; 61lbs. high-mixed at Danzig, 78s. Chilian and Victorian wheat at Melbourne, 7s. per

bush.; at Adelaide, 7s. 6d. At Francisco white wheat was 2d. 75c. per bush. (71s. 6d. per qr. of 480lbs.). Spring wheat at Montreal, 56s. 8d. per 480lbs.; Milwaukee No. 1 at New York, 66s. 3d.; No. 2, 64s.

The first Monday in London commenced on small supplies of English wheat, but the foreign arrivals were heavy, chiefly Russian, but including nearly 6,000 qrs. from New York. There was a small show of fresh samples on the Essex and Kentish stands; but the plenteousness of foreign and the openness of the weather brought an extreme dullness over the market, and sales could only be made at a decline of 2s. per qr. on the runs of English, and that did not effect a clearance. The foreign trade was quite on a retail scale at a decline of 1s. to 2s. per qr.; but fine qualities, being scarce, were not freely offered. With fair arrivals off the coast, floating cargoes were down 1s. per qr., with less demand. The effect of this decline on the country markets was generally manifest in reduced rates; but Sheffield, Louth, St. Ives, Market Harboro', Market Rasen, Lynn, and several other towns, were down to 2s. per qr. Some were only 1s. per qr. cheaper, as Boston, Newcastle, Leeds, and Hull; and a few stood firm, among which were Ipswich, Wakefield, Bourn, Uppingham, Gainsboro', and Barnsley. Liverpool was down 3d. per cental on Tuesday. Wheat at Edinburgh was dull, and declined 1s. per qr. at Glasgow. Foreign declined at Dublin 6d. per brl.; but all the native wheat there went off at former rates.

On the second Monday there was another small English, but ample foreign supply, though not to the former extent. Kent and Essex sent up a scanty exhibition of samples during the morning. The trade was however dull, though prices were fully supported. More demand was experienced for foreign, but nothing over the previous rates could be realized. Floating cargoes kept up their value by a renewed demand for France. The better accounts from London enabled some markets to quote higher prices; among these were Lynn, Leeds, Boston, and Market Rasen, where the improvement noted was 1s. per qr.; but these advances were counterbalanced by a decline to the same extent noted at Bristol, Monmouth, and Oakham. The more general reports noted no change. Edinburgh and Glasgow made no difference in prices. Dublin was again 6d. to 1s. per brl. dearer for home-grown qualities, but only firm for foreign.

The third Monday had rather better English supplies of wheat, but there was only half the previous quantity of foreign. Scarcely anything was sent up this morning from the near counties; and the few good white parcels offering were taken at quite as much money, but inferior damp remains dull. Though the French had relieved our granaries to the extent of 8,000 qrs., and taken several car-

goes off the coast, there was very little consumptive demand for foreign at unaltered rates. Some holders however of fine qualities, both red and white, would not sell without obtaining more money, and the demand for France kept the numerous arrivals off the coast at their former range. The trade in the country this week was generally dull, and at a few places rather less money—say 1s. per qr.—was accepted, as at Newcastle-on-Tyne, Market Rasen, Manchester, &c.; but some markets were very firm, and most of them made no change in prices. Edinburgh was unaltered for wheat, but Glasgow was down 6d. per bushel for foreign. Dublin found a ready sale for the little native wheat exhibited, but foreign could only be sold at a decline of 6d. per brl.

On the fourth Monday there was a limited supply of English wheat, but the foreign arrivals were heavy. The show of samples on the Kentish and Essex stands was very short, and the condition poor. Trade generally was dull for all sorts, except the finest qualities, which supported the rates of the previous week. With further demands from France for the better kinds in granary, prices were kept from any decline, notwithstanding the large arrivals; but business was slow as regarded consumption. After a temporary depression in floating cargoes, the shipment of several to France enabled sellers to recover the previous Monday's rates.

The imports into London for four weeks were 17,670 qrs. English, 114,791 qrs. foreign, against 19,262 qrs. English, 55,187 qrs. foreign for the same period in 1868. The general average commenced at 72s. 11d., and closed at 73s. 1d.; those of London began 74s. 9d., and closed at 74s. 8d. per qr. So by both these averages, prices would have seemed to undergo no, or very little, change; but, as one week's supply often differs materially from another, both in quality and condition, such an inference would be unreliable. The imports into the kingdom, for four weeks ending 14th March, were 2,363,506 cwt. wheat, 251,730 cwt. flour. The London exports for four weeks were 17,990 qrs.; so that they exceeded the receipts of native produce, independently of the diversion of cargoes off the coast.

The flour trade has been dull all through the month: good country supplies having been sent to market, followed by fair foreign arrivals, chiefly in sacks. The best country marks slowly made 52s. per sack. Foreign is actually cheaper than in France, yet buyers have not been free in their purchases at present rates. Town qualities have steadily kept at their former range, with 64s. per sack as the top price. The imports into London for four weeks were 79,322 sacks of country make, 24,825 sacks 3,700 barrels foreign, against 76,965 sacks English, 9,401 sacks 37 barrels foreign for the same period last year.

Though the supplies of maize this month have considerably fallen off, it has continued to decline, large shipments being expected from America, though prices there have recently risen 7 cents per bushel. The reduction for the month has been fully 2s. per qr. Indeed, very good quality yellow has been freely offering at 42s., with no more than 40s. per qr. bid, distillers being pretty full, and

the consumptive demand for feeding retail. The imports into London for four weeks were 15,177 qrs., against 1,420 qrs. for the same period in 1867.

The scarcity of fine malting barley in London, even including foreign arrivals, has been such that rates have lately been hardening, and buyers have had to pay about 1s. per qr. more money; but with the season hastening to its close, and a very small demand for malt on the part of brewers, there seems little prospect of realizing higher rates; while grinding sorts from the Danube having become more plentiful, these have given way in price fully 1s. per qr., with only small retail sales. The imports into London for four weeks were 9,225 qrs. English, 38,880 qrs. foreign, against 7,424 qrs. British, 28,391 qrs. foreign, for the same time last year.

In consequence of the slight advance in malting barley, holders of malt have also required more money; but this has checked sales, the consumption being much reduced by the destitution of the poorer classes.

For three weeks of the present month the entire supplies of oats were under an average; yet the pressure of high prices was so felt that, instead of any advance, they generally lost 6d. per qr. in value. On the appearance of a large fleet of foreigners, a further decline of 6d. to 1s. per qr. took place, making a reduction of nearly 1s. on fine sorts and of fully 1s. 6d. per qr. on those that were rough and light, of which the last arrival chiefly consisted, not being worth over 23s. to 23s. 6d. at 32lbs. per bushel. But really fine and heavy sorts being scarce, continue dear. The imports into London for four weeks were 21,230 qrs. English, 195 qrs. Scotch, 526 qrs. Irish, 104,922 qrs. foreign, against 6,993 qrs. English, 203 qrs. Scotch, 3,460 qrs. Irish, 124,174 qrs. foreign, for this period last year. Had it not therefore been for the steady supplies of English, the markets must have advanced in the early part of the month.

As regards beans, the best supplies of English and foreign was on the first Monday; yet prices then stood well. Since then the trade has been quiet, doubtless influenced by the decline in maize and white peas, as well as the prospect of arrivals from Egypt, where prices have been getting easier. With spring commencing, the demand too is now likely to fall off; but there are comparatively no stocks on hand, and the English crop seems nearly used up. The imports for four weeks into London were 2,799 qrs. English, 10,096 qrs. foreign, against 4,189 qrs. English, 25 qrs. foreign, in 1867.

Business in peas has been quite on a small scale, the fattening of hogs being too expensive for a free demand for maples and greys, and the inquiry after white for export having fallen off lately, though it may yet revive for Sweden and Finland, for the sustenance of the poorer inhabitants. The demand here for boiling has been almost nil. The imports into London for four weeks were 810 qrs. English, 550 qrs. foreign, against 1,478 qrs. English exclusively in 1867.

Linseed has been steady throughout the month, there being no fine qualities at present in the market, with only moderate arrivals.

The cloverseed trade has had more doing in it,

but much less than expected, so many samples of second-rate English have lately appeared at market, worth about 48s. per qr., though there are some fine still held high. White seed has been very dull, and so has trefoil; but tares were the heaviest of all, the market being fairly overdone, and prices promise to be much cheaper.

**CURRENT PRICES OF BRITISH GRAIN AND FLOUR
IN MARK LANE.**

IN MARK HANE.		Shillings per Quarter.
WHEAT, Essex and Kent, white...	old 74 80...	new 66 to 77
	" red	" 71 75...
Norfolk, Lincoln, and Yorkshire, red.....	"	" 65 73
BARLEY	35 to 36.....	Chevalier, new 89
Grinding.....	35 36.....	Distilling
MALT, Essex, Norfolk, and Suffolk 67	extra 69	73
Kingston, Ware, and town-made 68	" 70	73
BROWN.....	" 64	62
RYE.....	" 43	48
OATS, English, feed 26 to 33.....	Potato.....	30 35
Scotch, feed	Potato.....	00 00
Irish, feed, white 23	" Fine.....	28 30
Ditto, black.....	Potato.....	27 32
BEANS, Massagan	Ticks.....	40 43
Harrow	Pigeon	46 54
PEAS, white, boilers.....	Maple 16 to 47 Grey, new 43	44 44
FLOUR, per sack of 280lbs. Town, Households.....	"	60 64
Country, on shore	50 to 53	54 58
Norfolk and Suffolk, on shore	"	48 49

IMPERIAL AVERAGES.

For the week ended March 14, 1868.

Wheat	43,457	qrs.	73s.	1d.
Barley	86,129	"	43s.	3d.
Oats	11,734	"	27s.	2d.

COMPARATIVE AVERAGES.

Years.	WHEAT.		BARLEY.		OATS.	
	Qrs.	s. d.	Qrs.	s. d.	Qrs.	s. d.
1864...	77,432	40 1	45,177	31 5	13,207	19 8
1865...	70,688	38 3	41,679	28 10	7,614	21 4
1866...	72,446	45 6	40,180	35 10	8,372	23 10
1867...	57,584	50 4	29,200	41 5	8,741	24 9
1868...	43,467	73 1	36,120	43 8	11,724	27 3

AVERAGES

FOR THE LAST SIX

	WEEKS:	a.	d.	a.	d.	a.	d.
Feb. 8, 1888.....	73	4	42	7	26	0	
Feb. 15, 1888.....	73	0	42	5	25	0	
Feb. 22, 1888.....	72	11	42	9	26	2	
Feb. 29, 1888.....	73	4	42	5	26	0	
March 7, 1888.....	73	8	43	1	27	2	
March 14, 1888.....	73	1	43	3	27	2	
Aggregate of the above ...	73	3	42	9	26	6	
The same week in 1887	59	4	41	5	24	9	

BRITISH SEEDS.

MUSTARD, per bush., brown 14s. to 16s. white	9s. to 10s.
CANARY, per qr.	64s. 72s.
CLOVERSEED, red.	56s. 64s.
CORNIANDER, per cwt.	20s. 21s.
TARES, winter, new, per bushel	6s. 0s.
TRIFOLIUM.	21s. 22s.
RYEGRASS, per qr.	18s. 20s.
LINSEED, per qr., sowing 70s. to 72s., crushing	63s. 67s.
LINSEED CAKE, per ton	£11 10s. to £11 16s.
RAPESEED, per qr.	60s. 66s.
RAPE CAKE, per ton	26 0s. to 26 10s.

FOREIGN SEEDS.

CORLIANDER, per cwt.....	21s. to 22s.
CARAWAY.....	43s. 44s.
CLOVERSEED, red 4s. to 5s., white.....	68s. 68s.
TURNSEED.....	16s. 18s.
RYEGRASS, per qr.....	17s. 18s.
HIMPSEED, small 58s. per qr., Dutch.....	40s. 42s.
LINSEED, per qr., Baltic 58s. to 60s....Bombay.....	66s. 67s.
LINSEED CAKES, per ton.....	210 5s. to 211 15s.
RAPESEED, Dutch.....	60s. 66s.
RAPE CAKES, per ton.....	25 10s. to 26 0s.

HOP MARKET.

Mid and East Kent	£5 5	0 15	7 15
Weald of Kents	4 10	5 5	6 6
Sussex	4 10	5 5	5 10
Farnham and country	7 0	7 15	8 8
Yearlings	3 10	4 0	4 10

POTATO MARKET.

SOUTHWARK WATERSIDE.

LONDON, MONDAY, March 23.—During the past week the arrivals both coastwise and from abroad have been greater than the demand. The trade extremely dull at a decline of 10s. to 15s. per ton on most sorts. The following are this day's quotations.

Yorkshire Flakes.....	130s. to 160s. per ton.
Ditto Regents.....	130s. to 160s. "
Ditto Rocks.....	110s. to 120s. "
Lincolnshire Regents.....	120s. to 140s. "
Dunbar and East Lothian Regents.....	130s. to 150s. "
Perth, Forfar, and Life Regents.....	120s. to 130s. "
Ditto Rocks.....	105s. to 120s. "
French and Belgian whites.....	80s. to 90s. "

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, March 23.—Full average supplies of Potatoes are on sale at these markets. The demand has been heavy for all descriptions at about late rates. The imports into London last week consisted of 25 tons from Boulogne, 600 from Dunkirk, 51 from Harlingen, 85 from Hondleur, 132 from Caen, 25 from Bremen, 130 from Rouen, and 1 from Antwerp.

Regents	120s. to 160s.	per ton
Flukes	130s. to 170s.	"
Rocks.....	110s. to 140s.	"
French	90s. to 95s.	"

POULTRY MARKETS.—Turkeys 5s. to 8s., Goosings 7s. to 9s., Ducks 2s. 6d. to 4s., tame Rabbits 1s. 6d. to 2s., wild ditto 1s. to 1s. 3d., Pigeons 8d. to 1s., wild Ducks 2s. 3d. to 2s. 6d., Widgeons 1s. to 1s. 6d., Teal 10d. to 1s., Pintails 1s. 3d. to 1s. 6d. each. Surrey Fowls 10s. to 12s., ditto Chickens 6s. to 8s., Barndoor Fowls 5s. to 7s. per couple. English Eggs 9s., French 7s. per 100. Fresh Butter 1s. 3d. to 1s. 6d. per lb.

ENGLISH BUTTER MARKET.

LONDON, MONDAY, March 23.—Our trade keeps about the same; and the present cold weather supports prices pretty well.

Dorset, fine new.....	130s. to 134s. per cwt.
Ditto, middling	Nominal.
Fresh	13s. to 16s. per doz.

CHIPPENHAM GREAT MONTHLY CHEESE MARKET.—Upwards of 100 tons were pitched, and nearly all sold at the following prices: Broad doubles 54s. to 62s. per cwt. Cheddar 50s. to 63s. loaves 46s. to 58s. thin 40s. to 52s.

GLASGOW, (Wednesday last.)—The market continues to be well supplied with cheese. Business exceedingly quiet, and, although the price of fine keeps steady, we can quote no advance. There were 1,775 cheese laid down, and about 15 tons sold. Cheddars, new, 48s. to 56s.; Dunlop, new, 45s. to 53s.

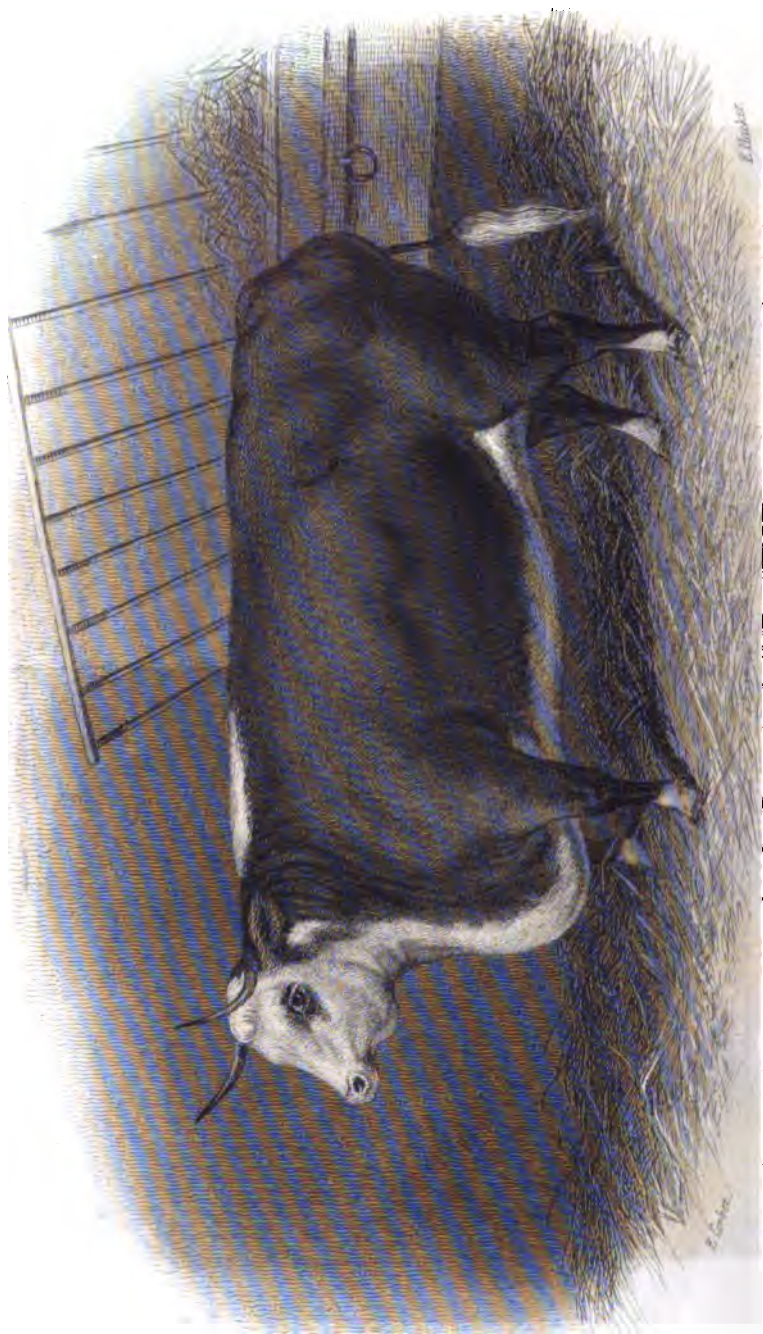
ENGLISH WOOL MARKET.

CITY, MONDAY, March 23.—There is a fair activity in the demand for English Wool, and the quotations are well supported. The new clip meets with a steady enquiry, the quality being, for the most part, superior.

CURRENT PRICES OF ENGLISH WOOL

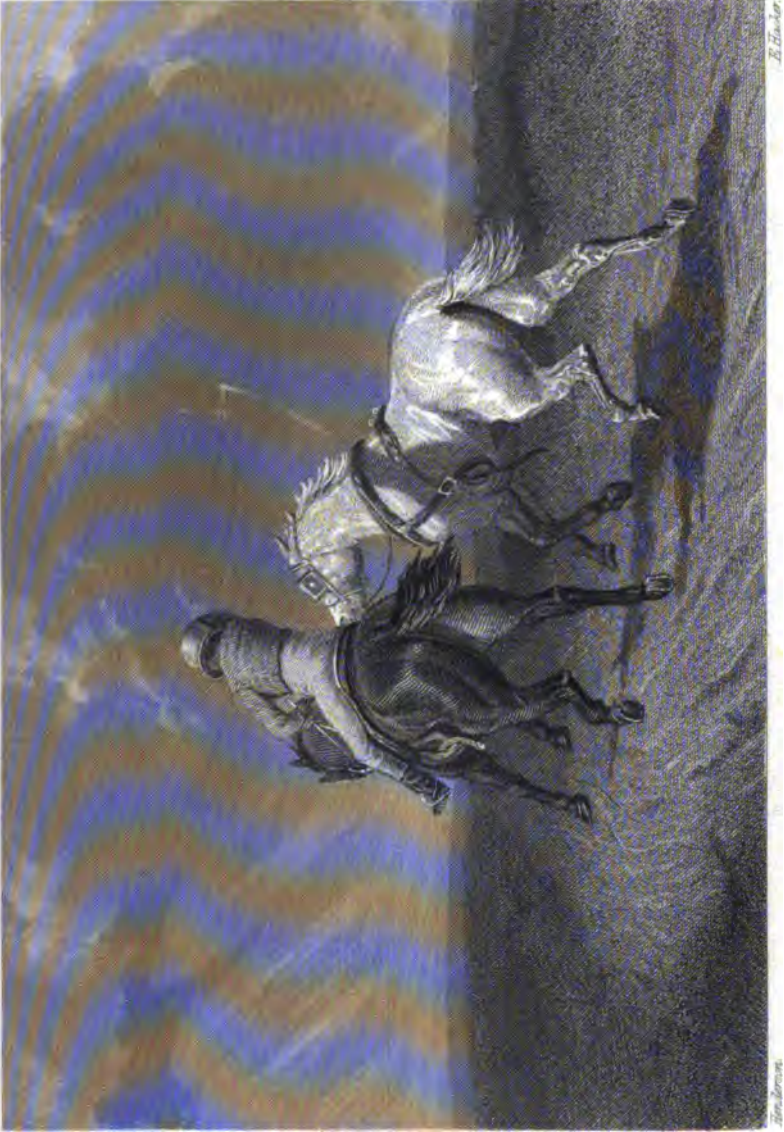
FLEECES —Southdown hoggets.....	per lb.	1	3	to	1	6
Half-bred ditto	"	1	4		1	6
Kent fleeces.....	"	1	2		1	5
Southdown ewes and wethers ..	"	1	1	1	1	2
Leicester ditto	"	1	1	1	1	2
SCOTS —Combing	"	1	0		1	5
Clothing	"	1	2		1	5

LEEDS (ENGLISH AND FOREIGN) WOOL MARKETS
(Friday last).—The demand for most sorts of English combing wool is good as compared with what it has been for many months, and prices are quite firm. There can be little doubt of an abundant supply in the country to meet all requirements of the manufacturers. In colonial wool there is no change to note. Prices keep up pretty well, and it does not seem likely that there will be any change of importance during the present public sales.



*A Hereford Heifer.
 Contributed by Mr. George Gedridge of Great Wemy, Bucks and the best of all the
 cows and heifers at the Birmingham and Dudley Old Stock Shows 1867.*

Illustration Published by permission of The Royal Agricultural Society, 1868.



Over the Downs.

London: Published by Eyegerson & Tuford, 265, Strand 1868.

PLATE III.

A HEREFORD HEIFER.

EXHIBITED BY MR. HENRY BETTRIDGE, OF EAST HANNEY, WANTAGE, BERKS.

This heifer, bred by Mr. Edward Tanner, of Ayntree House, Bromfield, Salop, and calved in the summer of 1864, was by Royal Butterfly (2196), out of Princess, by Superior (1751), her dam Beauty, by Northampton (600).

Royal Butterfly, a red with white face, bred by Mr. T. Roberts, of Ivington Bury, Leominster, and calved in the summer of 1861, was by Master Butterfly (1313), out of Duchess, by King James (978), her dam Pilot, by Andrew the Second (619).

At the Abingdon Cattle Show, held in the last week in November, 1867, this heifer, exhibited by Mr. Bettridge, took the first prize of £5 as the best heifer under four years of age, and also a Silver Cup, value 5*gs.*, as "the best of all the cows or heifers."

At the Birmingham and Midland Counties Meeting, in the week following, she took the first prize of £15 in the Hereford Heifer class, with the extra prize of £25 as "the best of all the Herefords," and the Gold Medal as "the best of all the cows and heifers."

At the Smithfield Club Show in the next suc-

ceeding week she took the first prize of £25 as the best Hereford heifer under four years old, with the Silver Cup value £40 as "the best of all the cows and heifers," and the Gold Medal for her breeder as "the best cow or heifer."

On first seeing this heifer in Bingley Hall we thus spoke of her: "The Hereford cows and heifers were by comparison very superior to the steers, as here all the chief honours centred, Mr. Bettridge's three years and a-half old heifer being not only the best of her class and breed, but also the best of all the cows and heifers. Up to a point she is certainly wonderfully good, having with breed and style great weight, breadth, and depth. Her back is something marvellous of itself; but alas! as a set-off, she finishes fearfully over her quarter, being here so gaudy and patchy as to amount to positive disfigurement, and for this very reason we question her right to the medal as the best of her sex."

Mr. Bettridge also took the first prize for Hereford cows at Abingdon, Birmingham, and Islington, with a cow bred by Mr. G. Griffiths, of Brierley, near Leominster.

PLATE IV.

OVER THE DOWNS.

Short-sighted Dobbin!—thou canst only see
The trivial hardships that encompass thee:
Thy chains were freedom, and thy toils repose,
Ould the poor post-horse tell thee all his woes,
How thee his bleeding shoulders, and unfold
He dreadful anguish he endures for gold;
Fired at each call of business, lust, or rage,
Hast prompt the traveller on from stage to stage.
Till on his strength depends their boasted speed;
Or them his limbs grow weak, his bare ribs bleed;
And though he groaning quickens at command,
He extra shilling in the rider's hand

Becomes his bitter scourge: 'tis he must feel
The double efforts of the lash and steel;
Till when, up-hill, the destined inn he gains,
And trembling under complicated pains,
Prone from his nostrils darting on the ground,
His breath emitted floats in clouds around.
Drops chase each other down his chest and sides,
And spatter'd mud his native colour hides;
Through his swollen veins the boiling current flows,
And every nerve a separate torture knows.
His harness loosed, he welcomes eager-eyed
The pail's full draught that quivers at his side;

And joys to see the well-known stable door,
As the starved mariner the friendly shore.
Ah ! well for him if here his sufferings ceased,
And ample hours of rest his pains appeased !
But roused again, and sternly bade to rise,

And shake refreshing slumber from his eyes,
Ere his exhausted spirits can return,
Or through his frame reviving ardour burn,
Come forth he must, tho' limping, maim'd and sore.
—*The Farmer's Boy.*

W H E A T H O E I N G.

The practice of wheat-hoeing is all but universal in modern agriculture : it dates its adoption with the introduction of drill-husbandry, and is a most valuable aid in the production of a full and profitable crop, besides wonderfully conducting to the cleanliness of the soil, and the healthy development of the plant throughout its several stages of growth. In pursuance of my plan to write a new series of papers according to seasons as far as I can, I take the above subject, wheat-hoeing. Wheat in the United Kingdom is generally—almost invariably—sown in the autumn, consequently the plant has to undergo all the vicissitudes in the winter of our most fickle of all climates ; its growth is very slow throughout the winter months, and very frequently in rainy districts, and on many soils generally it “ loses plant.” For the most part the soils where wheat is growing throughout the winter will require stirring in the spring. On all clays and strong loams the surface is frequently so compressed or solidified to such an extent that the wheat plant is almost surface-bound, and the milder soils are often so soddened by the winter “ waters ” as to require the soil moving ere the plant can shoot forth with vigour ; and if we go further, and take the lightest soils, we shall find them with closed surfaces, denoting absence of air and keeping atmospheric influences from the plant ; and even the well-clayed Fens, the peats and moors of the country, appear to require some relief before the spring growth becomes luxuriant and healthy. This shows the desirability—nay, the necessity for wheat-hoeing, or at least the stirring of the soil in some way or other ; this is done in some districts very advantageously by the field-roller only, in some localities by the harrow, in others by the treading of sheep, and various other means are adopted. But the all-but-universal method is by hoeing, and that chiefly by manual labour. Horse-hoeing is, however, very much practised throughout the milder soils of the country, and is advancing in public favour, owing, in a great measure, to the great improvements made in the construction of horse-hoes, and their adaptation to every kind of drill and row-culture.

The true principles of hoeing consist mainly in the breaking up the surface-soil, promoting its more minute subdivision, its requisite aëration, and the destruction of surface-weeds. Jethro Tull says that, “ as soon as the ploughman has done his work of ploughing and harrowing, the soil begins to undo it, inclining towards, and endeavouring to regain, its natural specific gravity ; the broken parts by little and little coalesce, unite, and lose some of their surfaces ; many of their pores and inter-

stices close up during the seed's incubation and hatching in the ground ; and, as the plants grow up, they require an increase of food proportionate to their increasing bulk ; but, on the contrary, instead thereof, that internal superficialities, which is their artificial pasture, gradually decreases. The earth is so unjust to plants—her own offspring—as to shut up her stores in proportion to their wants ; that is, to give them less nourishment when they have need of more ; therefore man, for whose use they are chiefly designed, ought to bring in his reasonable aid for their relief, and force open her magazines with the hoe, which will thence procure them at all times provision in abundance, and also free them from intruders—I mean their spurious kindred the weeds, that robbed them of their too scanty allowance.” Thus wrote the homely and quaint Tull one hundred and thirty-five years ago : it contains the pith of the whole subject. Unquestionably, hoeing, judiciously applied, does surprisingly promote the growth and healthy development of plants, by keeping open the soil through stirring, and by sub-dividing it into minute particles on the surface, thus providing interstices and crevices into which the young rootlets will find their way, and so advantageously extract the daily food necessary to their progression, at the same time freely admitting atmospheric influences. In horse-hoeing the very tread of the horse and passing of the horse-hoe, in some states of the soil, will so jar and shake the earth as to open pores and minute cracks and crevices, to the great benefit of young rootlets. I say hoeing judiciously applied ; this involves a good deal. Hoeing is designed to promote progress as above ; but if it is improperly executed, or done when the soil is too wet or too dry, too deeply or too shallow, too frequently or too seldom, all alike do hurt to the crop, if the land is not in a proper state for hoeing, and the crop's requirements are not sufficiently estimated. On many rich soils, or soils richly manured, an extra hoeing will frequently cause a superabundance of straw, to the detriment of the yield of grain ; but, on the other hand, if the weather is suitable, poor clays and other inferior soils are greatly benefited by it. The great object therefore in hoeing should be to provide a rather deep loose soil contiguous to the plant for the absorption of their food from the atmosphere, that the near and spreading rootlets may freely appropriate it, besides providing a large extent of internal interstices or openings, in which the plants can force their rootlets, and thus obtain by their spongioles additional food to promote their more vigorous growth.

The extirpation of weeds from the surface is another most essential benefit derived from hoeing. Cleanliness is indispensable to good cultivation ; hence, one great principle in hoeing is the eradication of weeds. These

will grow everywhere, and they will grow apace. They must be kept down, and, if possible, be destroyed. Hoeing, repeated hoeing, in all its various operations, is the best method hitherto discovered for the destruction of weeds during the growth of the crop. In row culture it is an admirable adjunct to agriculture: the horse-hoe for deep culture; the hand-hoe for surface work. This surface-hoeing or stirring has other advantages: it provides a suitable deposit in the upraised mould for whatever gaseous matter may be afloat in the air, and to be deposited thereon by rain or dews. In this way a continuous supply of valuable food is found, both for the spongioles underground and the mouths or leaves above-ground; whereas if the surface is left untilled, the evening's dews are taken up by the morning's sun, and the advantage to the plant is lost. This is, in fact, the art or best method of feeding plants, and the faster they grow the more food will they require. They are continually putting forth more rootlets, and, as the leaves or blades of corn or roots increase, they put forth more mouths. Hoeing will supply the rootlets, and the sun and atmosphere the mouths or absorbing power of the blades or leaves, and thus is their sustenance upheld. And while all this is going on for the benefit of the plant, it also ensures the destruction of innumerable weeds, which would otherwise infest the soil. This hoeing then, I repeat, is the great means of promoting the early and full development of the plant, and also in a great degree the latent powers of the soil. The continuous breaking-up and partial pulverisation of the gradually-consolidating soil causes the free admission of every atmospheric fertilising agency, and prevents the growth of every intruding and obnoxious weed. The farmer's judgment must guide the whole.

The time and practice or operation of wheat-hoeing and the hoeing of other grain crops do not require much remark. The wheat plant should not be in a sufficiently forward state to throw out its coronal shoots or roots. It should receive its first hoeing prior to this state of growth. The wheat plant puts out two sets of roots, the seminal and the coronal; the seminal root is that of its first growth and downwards. The coronal are the roots thrown out from the plant horizontally, near the surface, and are many; hence the soil requires preparing for these coronal roots, and the moulding up operation of the hoe in hoeing is the most effectual means of preparation. The wheat-hoeing should take place, therefore, as soon as the wheat plant begins to quicken its growth in the spring, providing the soil is in a proper state, *i. e.*, when it will work freely without clogging the hoes. It must be done at a fair depth, so as to receive these coronal roots, and yet not so deep as to disturb the plant and injure the seminal ones. The workmen should not take "long strokes," but just so long as to keep the hoe at one equal depth and inclination as it is drawn towards the workmen. In exactness of depth and uniformity of cut, the horse-hoe excels the hand-hoe; but it is apt to miss portions of the row, and occasionally injure it. Wheat-hoeing is really and truly a manual operation; but horse-hoes are admissible, and under good management are very useful. The crops of oats and barley grow very rapidly in the spring. It is desirable to wait till they are fairly weaned from the grain, and are in vigorous growth, before hoeing, and then not deeply. Beans and peas may be advantageously hoed at any time after they have put in a good appearance, and the oftener the better in reason. These tap-rooted crops are greatly benefited by repeated hoeings till nearly in blossom.

FARM "LABOURERS' UNIONS."

A conference was lately called at Willis' Rooms, at the instance of the Agricultural and General Labour Institute, "On the subject of the improvement of the condition of the agricultural labourer." Canon Girdlestone was the great hero of the occasion, and amongst his chief supporters were Mr. Edmund Beales, of the League; Mr. George Potter, of the Trades Unions; Mr. Baxter Langley, the Marquis of Townshend, and so forth. The Canon opened the business with a series of resolutions, the point of which went, as in his recent speech at Haliburton, for the Establishment of Labourers' Protection Unions, on a similar system to that of the Trades Unions. In a very lengthy discussion, however, the following amongst other special remedies were advanced: The adoption of the principle of co-operation between the farmer and the labourer—the institution, on the part of the Government, of public works for reclamations from the sea, the Thames, and the Severn—an Act for the compulsory education of labourers' children—the proper cultivation of the millions of acres of waste land in the kingdom—the means for migration and emigration—the abolition of the truck system, more especially in the way of allowances of beer and cider—the improvement of cottages—and an Act against the employment of women and children in field or farm work. Ultimately the resolutions in favour of Labourers' Unions were carried by a large majority, and a committee appointed to carry out this object, of which of course Messrs. Beales, Potter, and Girdlestone will be the leading spirits.

It need scarcely be said that the farmer came in for much

misrepresentation and that the argument was grounded chiefly on exceptional cases, although the original resolutions of the Reverend Canon had to be occasionally modified before they were put. Any comment on the general tone of the meeting would be worse than idle; or if we were induced to offer any, this would come best in the remark of an agriculturist from the Lothians, by whom we chanced to be sitting, and to whom we were personally unknown. After listening for an hour or two in mute astonishment, he simply said, on leaving, "I never was at a meeting before where people appeared to know so little of what they were talking about." Any exception to this very general rule would be found in the addresses of Lord Lichfield, Lord Northbrook, and Mr. Sewell Read; but those gentlemen were listened to with impatience, or had to speak occasionally against more decided interruption. We confess to sharing Lord Lichfield's doubts as to who or what may be the Agricultural Labour Institute, as we may also add our astonishment at seeing some of the names permitted to be paraded amongst its patrons or promoters. The only occasion upon which we had to notice its circular was when calling attention to the promulgation of certain stale platitudes, where the farmer was offensively and condescendingly addressed as "my friend" and "my good friend," and charitably assumed to be living in utter ignorance of almost everything that was going on about him. Just at present the Agricultural Labour Institute looks very like becoming the tool of Canon Girdlestone, as there can be no question

but that this reverend man is making considerable capital at the expense of the Devonshire farmers. Mr. Sewell Read said something in their defence on Saturday, but have they nothing to say for themselves? and will they not act upon the advice of one of their own local papers, which has let us already into something of the secret of this parish squabble? *The Western Times* says, "let a meeting be called by the local Chamber of Agriculture to inquire into the conduct of the Haliburton farmers and the Haliburton clergy, and let the Canon be specially invited to attend this Conference." We say so too, for Canon Girdlestone by no means minces matters with his neighbours. On the presentation of the testimonial he triumphantly declared that "If any farmer in England was bold enough to tell him that a badly-fed, badly-stabled, badly-groomed horse would do his work half so well as a well-fed, well-stabled, and well-groomed animal, then, and not till then"—and so forth. Precisely so; but here surely is a point upon which a little further discussion would not be amiss? Were the labourers "badly-stabled" in the Haliburton cottages of which photographs were taken? At Wigston in Leicestershire, only last Wednesday another clergyman,

the Reverend T. W. Barlow, who seems to be in some way connected with Haliburton, and who is also advocating labourers' Unions, said, "At the time when the lands at Haliburton belonged to the Monastery of St. Augustine, a comfortable cottage, with a plot of garden at the back of it, was the home of all the labouring men." So far, so good; but have the cottages on the lands belonging to the Church always been such "comfortable" homes for the labouring men as they were in the good old times of the Monks of St. Augustine? Surely there is something to talk over here! Moreover, there may be more ways than one of inducing a man to leave his native place. If you pull two cottages down, and then only put up one in their place, this certainly sounds like a very practical and very direct means towards an exodus, as it is a plan against which we have continually protested, and against which we protest still.

Trades Unions have not of late come out very well in this country, nor do we believe that the condition of the agricultural labourer will be improved by the use of such agency, even when under the control of Messrs. Bales Potter, and Girdlestone.

OUR SUPPLY OF FOOD.

BY CUTHBERT W. JOHNSON, F.R.S.

It is one of the natural results of our national prosperity, and consequent rapid increase of population, that our demand for food has largely exceeded our production. We find therefore our imports of food almost annually increasing. Thus the foreign wheat imported in 1865 was 20,962,963 cwts., in 1866 23,156,329 cwts., in 1867 23,315,569 cwts.; and even if we take a small article of food, such as eggs, we find that in 1865 about 364,000,000 were imported, in 1866 about 438,000,000, and in 1867 397,934,520.

It will be useful if we examine a little the statistics bearing upon our supply of food, and we shall be materially aided in this retrospect if we avail ourselves of the very laboriously collected agricultural returns lately published by the authority of Parliament, and also of a valuable little tract, chiefly founded on those returns, by Mr. James Caird. This work, which is entitled "Our Daily Food," is published by Messrs. Longman and Co., at a cost of only a shilling. It will well repay my readers for a careful perusal.

It is very true that these statistics, chiefly composed of figures, are wont to be classed with the dry matters of life. But we shall find in those tables which I propose to give, materials on which we may arrive at very practical and profitable conclusions. And these suggestions, too, may not be confined in their value to past modes of cultivation, but be the means of guiding us to the production of different crops, or the adoption of more profitable branches of agriculture. From these valuable official returns, indeed, we learn many facts with regard to our supplies of food, very suggestive of useful reflec-

tions. We hence learn that the total acreage under crops and the number of our live stock in each division of the United Kingdom was in the years 1866 and 1867 as given in the following tables:—

DESCRIPTION OF CROPS.	YRS.	ENGLAND.	WALES.	SCOTLAND.	IRELAND.
CORN CROPS.					
Wheat	1866	3,126,431	113,862	110,101	299,138
	1867	3,140,025	116,733	111,118	261,906
Barley or Bere	1866	1,877,387	146,323	213,619	152,538
	1867	1,892,338	148,340	218,486	172,657
Oats	1866	1,503,990	251,893	1,004,040	1,699,635
	1867	1,506,361	247,006	997,120	1,659,422
Rye	1866	50,570	2,452	7,055	7,794
	1867	42,875	3,124	7,066	7,673
Beans	1866	492,586	3,534	28,537	12,204
	1867	506,539	3,435	27,324	11,153
Peas	1866	314,206	3,010	3,188	2,630
	1867	312,400	2,766	2,915	2,334
Total	1866	7,365,170	521,074	1,366,540	2,174,063
	1867	7,399,347	521,404	1,364,029	2,115,157
GREEN CROPS.					
Potatoes	1866	311,151	44,266	143,426	1,050,353
	1867	289,611	45,077	157,529	1,001,545
Turnips and Swedes	1866	1,610,610	62,442	478,990	317,196
	1867	1,621,193	67,927	484,800	333,711
Mangold	1866	254,081	3,864	852	20,122
	1867	253,937	3,345	844	18,505
Carrots	1866	15,598	295	916	3,793
	1867	14,732	346	855	3,360
Cabbage, Kohl Rabi, & Rape	1866	159,589	1,339	5,075	49,949
	1867	128,863	679	4,150	35,774
Vetches, Lucerne, & other Green Crops, except Clover or Grass	1866	408,933	97,069	33,998	40,142
	1867	383,478	21,013	19,864	37,123
Total	1866	2,759,919	139,265	663,257	1,461,605
	1867	2,691,734	138,387	668,042	1,432,253

As Mr. Fonblanque observes, for Scotland and Ireland there are previous returns which can be compared with the returns for 1866 and 1867; and the following table shows the changes during the last ten years in the cultivation of the principal crops, and in the number of live stock in those parts of the Kingdom:—

CROPS.	SCOTLAND.		IRELAND.	
	Average of the Years 1856-57, 1866-67.		Average of the Years 1856-57, 1866-67.	
	Acres.	Acres.	Acres.	Acres.
Wheat	243,240	110,609	544,348	280,549
Barley	182,062	216,052	197,042	162,578
Oats	928,628	1,000,580	2,009,185	1,679,553
Potatoes	144,555	150,477	1,125,675	1,025,949
Turnips	468,411	481,895	352,249	326,454
LIVE STOCK.				
	No.	No.	No.	No.
Cattle	970,742	958,435	3,604,406	3,724,267
Sheep	5,749,864	6,074,340	3,573,273	4,550,148
Pigs	136,639	204,011	1,086,855	1,365,583

The average produce per acre of wheat in England has long been a question of great interest. That from the days of the Tudors it has been very slowly increasing in amount there is no doubt. We read of a produce on large Suffolk and Surrey farms in those days of only $1\frac{1}{2}$ and 2 quarters per acre. In 1770 Arthur Young calculated the average produce to be about 23 bushels. In 1850 Mr. Caird estimated it to be $26\frac{1}{2}$ bushels per acre; he now deems it to be about 28 bushels—Ireland 24 bushels, and the average yield of the United Kingdom to be about 27 bushels per acre. The influence of seasons upon the produce is, however, very great. Mr. Caird calculates the difference of a bad year like that of 1867, and a good year like 1863, to be equal to 14 bushels per acre, or more than one-half the average produce of our wheat fields. The result of a bad season necessarily produces an increased importation of corn and flour; so that, as Mr. Caird tells us, if there was paid for these imports of foreign corn £6,100,000 in 1863, there was paid for such corn in 1867 £33,500,000. The estimated deficient amount of the produce of our wheat and the foreign supply received during the succeeding year correspond in a very remarkable way, as we find in the following table:

YEAR.	ESTIMATED DEFICIENCY.		SUPPLY RECEIVED.	
	Qrs.	Qrs.	Qrs.	Qrs.
1862	7,100,000	.....	7,205,000	.....
1863	4,500,000	.....	6,727,000	.....
1864	5,800,000	.....	6,029,000	.....
1865	7,400,000	.....	6,850,000	.....
1866	9,100,000	.....	7,283,000	.....
	33,900,000	.....	34,094,000	.....

Next, as regards our live stock, we find from the same little Parliamentary blue-book that the number of our live stock in the years 1866 and 1867 was as follows:

TOTAL NO.	YEAR.	ENGLAND.	WALES.	SC'T'L'ND.	IRELAND
Cattle ...	1866	3,307,034	541,401	937,401	3,746,157
	1867	3,469,026	544,538	979,470	3,702,378
Sheep ...	1866	15,124,541	1,668,663	5,255,077	4,274,282
	1867	12,798,337	2,227,161	6,893,603	4,826,015
Pigs	1866	2,066,299	191,604	219,716	1,497,274
	1867	2,548,755	229,917	188,307	1,233,893

PROPORTIONATE NUMBER OF LIVE STOCK TO EVERY 100 ACRES UNDER CROPS, FALLOW, AND GRASS:

	YEAR.	ENGLAND.	WALES.	SC'T'L'ND.	IRELAND
Cattle ...	1866	14.9	23.7	22.5	24.1
	1867	15.1	21.6	22.4	23.8
Sheep ...	1866	68.0	73.0	126.4	27.7
	1867	86.3	88.4	157.4	31.1
Pigs	1866	9.3	8.4	5.3	9.6
	1867	11.1	9.1	4.3	7.9

Of the past and present supply of live and dead meat to this country, we find, from another Parliamentary return of the present session (No. 153), that the number of live stock imported into the United Kingdom since the prohibition to their import was removed, has been as in the subjoined table:

YEAR.	CATTLE.	SHEEP AND LAMBS.	SWINE.
1842	4,264	644	410
1843	1,521	217	361
1844	4,889	2,817	265
1845	16,833	15,957	1,590
1846	45,043	94,624	3,556
1847	75,717	142,790	1,242
1848	62,738	130,583	2,119
1849	53,449	129,266	2,653
1850	66,462	143,498	7,287
1851	86,520	201,859	15,599
1852	93,061	230,037	10,524
1853	125,353	259,420	12,767
1854	114,338	183,436	11,077
1855	97,527	162,642	12,171
1856	83,306	145,059	9,216
1857	92,963	177,207	10,673
1858	89,001	184,482	11,565
1859	85,677	250,680	11,084
1860	104,569	320,219	24,452
1861	107,096	312,923	30,808
1862	97,887	299,472	18,162
1863	150,898	430,788	27,137
1864	231,686	496,243	85,362
1865	283,271	914,170	132,909
1866	287,707	790,880	73,865
1867	178,620	534,788	49,175

Of foreign meat the following quantities were imported into the United Kingdom during the years 1865-6:

	1865.	1866.
Beef	228,296 cwts.	178,398 cwts.
Bacon and Hams	713,346 "	635,782 "
Pork	183,155 "	178,548 "

Of home-produced fresh meat we find that during the year 1867, from January to November inclusive, the following number of tons were brought into the metropolis from the provinces, by the undermentioned carriers. The table also gives the average number of miles the meat was carried:

CARRIER.	TONS.	MILES.
Great Eastern Railway Company	11,081	70
Great Northern Railway Company	22,065	—
Great Western Railway Company	5,958	106
London and North-Western Railway Co.	16,102	—
London and South-Western Railway Co.	4,573	180
London, Brighton, and S. Coast Rail. Co.	329	60
London, Chatham, and Dover Railway Co.	87	45
Midland Railway Company	4,340	—
South-Eastern Railway Company	747	70
London and Edinburgh Shipping Company	615	—
Newcastle Steam Company	148	500
	60,945	—

It is now about twenty years since the controversy was at its height as to the influence of Free Trade upon the farming of our islands. It was then predicted that certain climates and otherwise more favoured countries would well compete with our agriculturists. But that, in certain productions, these great cultivators would need no protective duties to enable them to contend successfully with foreign producers. Those predictions have been well verified; great have been the efforts; far onward have been our advances since then. But, as Mr. Caird remarks: "The great margin still to be filled up is the

daily supply of our fresh meat, fresh dairy produce, vegetables, and barley. Since 1850, the price of bread on the average has remained the same (the only species of corn which has risen materially in price since 1770 is barley, and that is accounted for by the increasing use of beer), while that of meat, dairy produce, and wool has risen 50 per cent., notwithstanding an immense and increasing import of these articles. This, and the steadily-advancing price of barley, is the true explanation of increasing rents and agricultural prosperity, notwithstanding increasing receipts of foreign corn.

"In the production of barley, as in that of long lustrous wool, this country is still without a rival. Since 1835, when tithes were commuted into a money payment, the average value of the three kinds of corn has not, on the whole, altered; but the price of wheat has fallen 18 per cent., while barley has risen 8, and oats 4. The growth of barley has in this country nearly doubled in extent within the last 20 years. While it yields the largest weight per acre of any kind of corn, it seems the least exhaustive to the soil."

There is every reason to believe that it is not only to an increased produce of corn, beef, mutton, and pork that we must rely upon for the support of an increasing population; but that we may acquire other and large supplies from our farm-yard. I have, for instance, alluded to the enormous and largely-increasing import of eggs (and a similar remark applies to poultry, butter, cheese, &c.)

Now it is surely worthy of more enquiry whether this import might not be materially reduced by an increased attention to our poultry yards? Two valuable papers on this subject will be found in the last volume of the *Journal of the Royal Agricultural Society*. The first is a prize essay by Mrs. F. Somerville, of Rufford. The general conclusion to which she arrives (p. 581) is that "no given rule can be laid down as regards the keeping and profitable extension of poultry on an ordinary farm, as so much depends entirely upon the conveniences and attendance—whether the latter can be performed by a member of the farmer's own family, whose time is not otherwise profitably employed, or whether it can be had at a reasonable rate; if not, a large number will have to be kept to produce a profit, after paying for special attendance; but if poultry of all descriptions are kept in large numbers on too small a space, the ground becomes tainted, and disease and death make their appearance amongst them. Poultry in some hands flourish and pay wonderfully well, whilst in others it is just the reverse; all depends upon the care, skill, and attention bestowed in the management."

"For the satisfaction of the reader," Mrs. Somerville adds, "I will state the produce and value for one year of my poultry, as regards the female stock managed as herein stated. In some instances fancy prices were obtained, and prizes taken on exhibition, which, of course, are included in the value. No account of the quantity of food consumed was taken, as I had no intention of offering a statement to the public. It was, however, all grown on the farm, except about £4 worth."

"104 hens produced 18,789 eggs, exclusive of those set; they reared 372 chickens, besides hatching the ducks and guineafowls."

"5 turkey hens reared 74 young."

"6 geese reared 58 goslings."

"Ducks hatched under hens: 79."

"Guineafowls hatched under hens: 42. Reared and sold."

"Attendance: a boy and myself."

"Total value of the above, £190 17s. 8d."

The second paper is by Mr. H. H. Dixon upon the feeding of turkeys, geese, and ducks for the London market. In this essay, written in his usual happy style, we learn many things well worthy of our careful study. We may often hear the enquiry, especially about Michaelmas and Christmas, as to "Where can all the geese and turkeys come from?" Now, on this head, Mr. Dixon observes, after describing the breeding of turkeys by the farmers of Norfolk and our other Eastern Counties:—

"On the smaller farms they are seldom finished off for market, and middle-men go round about the end of August and buy them up at an average of £4 10s. per acre. They are then sold at a small profit, of sometimes only 6d. per head, to the larger farmers to 'shack' upon the barley or oat stubbles, while the 'swine well-ringed' are put upon the wheat ones. A turkey-boy is placed in daily attendance on the flock, to drive them home if it is wet, and keep them away from the trees, to which, true to their American forest origin, they are very partial. Besides what they get on the stubbles, they have abundance of in-door relief. The system of cramming them at night with force-balls is very much abandoned, and they are generally well kept on potatoes, barley-tailings, and light wheat, ground and mixed with milk. Common white turnips, which they eat greedily, without alicing, tend to make their flesh white and to 'cool their coppers'; and brickdust to scour their maw is never neglected."

"Hen birds, which get fat sooner and are generally killed off before the end of November, are thought to be a daintier morsel than the 'gobblers.' Some two-year-old cocks (beyond which age they are very seldom kept) have been killed at 30lbs., when a heavy weight is wanted for an audit dinner; but with very high feeding, in one or two rare instances, prize birds have turned the scale at 40lbs."

"It is to Norfolk and Suffolk that we look for goose management on the largest and most economical scale. The goose trade of the great Norfolk dealers resolves itself into two branches—the green geese and the Michaelmas. In March and April they begin to get in their goailing supplies from farmers or cottagers near the commons in both those counties. Most of these goails are about five weeks old, and many of them in a very poor plight; but six or seven weeks of feeding under stages of barley-meal, maize, wheat-tailings, and brewers' grain-mixed, make them all ripe for the green goose market. The Michaelmas geese take their places under the stages in August; and Norfolk and Suffolk are pretty well scoured before the dealers fall back upon the Irish and the Dutch supplies. The Dutch, which are principally grey, come from Rotterdam; and one of the largest Norwich dealers imported 17 tons weight of live birds last year. They come over by steamers and sailing-vessels, packed in big flat baskets, but not to any great extent after the 1st of October. In the dealers' hands they are fed on the same principle as ducks—low fare to begin with, and then on a gradually-ascending scale. On turnips they are capital substitutes for sheep, and when a dealer has a turnip-field he not unfrequently hurdles off a portion of it, and eats it off with them. They first clear the tops and then the bulbs of the softer turnips; but when they have a field of swedes to deal with, the man in attendance gives each turnip a chop. With this aid they eat far cleaner than sheep, and, in fact, leave nothing but their 'taith,' which answers admirably as a preparation for the next wheat crop. Mangolds are not so much to their taste as turnips, but they eat the tops with a special relish. While they are busy with these green crops they require nothing but large troughs of water; and the finishing process consists in putting them under stages for a month, and feeding them on brewers' grains and meal."

"On the western moors of Cornwall every one keeps geese, and they are bought up by jobbers in thousands for the stubbles. Summer Court on September 25th is the 'goose fair' of the county; but they are only eaten there, and bargains are struck under their savoury influence for draft ewes and wethers. Farmers all over England are supplied very largely both from Holland and Ireland. Geese are extensively bred in Moravia; and the hilly districts in Germany and Holland are peopled by a number of small goose-farmers, who get their living entirely by them. The Hussenheim goose-market is a very large one and of great antiquity, and, according to local tradition, the town owes its name to the bird of its choice. The Dutch hucksters buy goslings from the cotters (who, like the burghers, are remarkable for turning the penny the right way) at prices varying from 1s. 6d. to 2s. They are driven to Rotterdam, where they are packed up in crates, which are capable of holding about fifty or sixty each. Their voyage to Hull by the steamers is charged at 18s. per cwt., or about 25 for 300 or 400 birds, and they are not fed until they are landed, and then with oats. From Hull they are forwarded to central market towns in railway trucks, each of which is capable of holding 230 birds. A small per-centage of the more weakly ones die from being trampled on; and these casualties, with the expense of transit and sale-attendants, bring up the price to about 3s. 9d. when they are pitched in the market during August and September. The Irish

collections are managed on a similar principle. If the goslings are purchased within a reasonable distance of Dublin or Dundalk, they are driven to those ports, and if not, they are sent by rail. Liverpool, like Hull, is quite a 'board of supply' for English dealers during the season.

"Considerable supplies of ducks are also brought from Holland, and some turkeys as well; but the Norwich dealers' duck-supplies are mostly gathered in through the hucksters from the small cottagers in the county. Rouens and Aylesburys have not been much used for crossing, and the supplies are generally of the small mixed brown and cinnamon sort, which has subsisted since the Flood. The cottagers do not force their ducklings, but sell them to the dealers, one of whom takes 30,000 a year, principally in the duck-and-green-pea season. They come to him about 3lbs. in weight, and after a week in the lean and three in the fat yard, they are turned out in prime condition, and with fully 1lb. gain in flesh."

We see, then, even if we turn from our corn-fields and our bullock-yards, that there are other sections of the farm-yard which may, with requisite care, yield large amounts of food. I say with "care," because every reader will concur with me in the conclusion that with steady attention we shall generally derive profitable results from our bullock-yards, our piggeries, and our poultry; but, on the other hand, that to the careless and the indolent these will usually be attended with loss.

ON GRASS-SEEDS:

It is highly-essential for the future well-doing of all crops that the seed used should be of the best quality obtainable of its kind, and the vitality not in any degree impaired by exposure to the weather or other deteriorating influence. With the seeds of clovers and grasses too much care cannot be exercised in having them true to name, well-saved, and free from any kind of mixture that might by taking root eventually take possession of the soil, to the almost complete exclusion of the more valuable herbage. The fact of clover and grass-seeds being intended not for one year's crop only, but mostly for several, and often for a considerable number of years, makes it all the more necessary that the most marked and minute attention possible should be given to the subject of choosing the seeds. Notwithstanding the importance of this matter however, it is a fact of which we have indubitable testimony from the state of many fields, that year after year a large breadth of land is seeded with abominable mixtures, called, by way of courtesy "Grass-seeds," but which contain vastly more seeds of the vilest and most noxious weeds known to the agriculturist, than they do of those which are genuine, and consequently valuable. When such seeds as these are sown, the farmer is too apt to lay the blame on the party he procured them from, when they do badly; seldom condemning himself for his short-sightedness in not getting his seeds from a respectable house, instead of contenting himself with the sweepings of a hay-dealer's loft, or some other person who offered hay-seed at an unusually low price, thus sacrificing quality for mere quantity. For the sake of saving a few wretched shillings in the commencement, he takes the chance of losing pounds during each year the field is in grass; or it may be that it is so bad as to compel him to be under the necessity of ploughing it up at once, thus causing a total loss of time, labour, and money, besides interfering with his rotation—in itself a matter which is often a source of the most intense and bitter annoyance. Although the best seeds may be seemingly high-priced, they are not on that account always to be considered expensive; on the contrary, it is easy to prove that they are less so than those which are inferior, not only by their future well-doing in the field, but even at the time of purchase. When the seeds are good and dependence can be placed upon their successful germination, the weight required per acre is so small that the farmer who takes

the trouble of making the comparison, and yet grudges the difference of outlay between the small quantity of prime well-saved seed required and loft sweepings, wherever procured, must be very short-sighted indeed, and singularly oblivious to his own interest. It is only reasonable to suppose that those who content themselves with inferior grasses do *not* take the trouble of making the comparison, but just content themselves with the vague idea that such an one had a good deal of hay in his loft from time to time last season, some of it of by no means bad quality; he offers the seed that has dropped or probably beaten out at a low figure, and by putting it in pretty thickly, it may perchance do as well as if purchased from a regular seedsman. Occasionally, there is no doubt, seed purchased from such a place does do well, when the hay happens to have been all saved from superior grasses, and more especially when sown upon soil of a rich forcing nature (a quality in land which hides a multitude of deficiencies), but on the majority of farms it is a highly dangerous experiment for any one to try. There is no necessity for our entering into details in this paper about the quantity of seed of each variety required for an acre: it is quite sufficient to state that an acre of pure seed, for one year, can be had from any respectable seedsman for about 13s., from two to three years from 17s. 6d. to 21s., and for permanent pasture from 28s. to 30s. on ordinary soils—a scale of prices which, on the score of economy, leaves nothing to be desired. We hear a great deal about old and bad seeds being vended to farmers, and scarcely a season passes without a series of actions between farmers and seedsmen, arising out of the failure of seeds, being duly chronicled in the agricultural papers. Now, although we ourselves have not the slightest connection with the seed-trade, either pecuniarily or otherwise, and our sympathies being altogether with the farmer, we cannot help thinking—nay, we are strongly of opinion that the seed-merchant is often more sinned against than sinning. When seeds have been procured from a respectable house, and these seeds represented to be, and are paid for as the best quality, and afterwards fail, either partially or totally, it may in the greatest number of cases, unless irrefragable evidence is shown to the contrary, be very fairly attributed to local causes. It is preposterous to suppose that any merchant desirous of cultivating and retaining a connection would knowingly vend a spurious article in the way of

farm-seeds, as the person purchasing such, even if deceived at the time, and taking them on the faith of fraudulent representations, would be a very fool indeed if he ever sent an order to the same house after finding out by the failure of his crop, or perhaps crops, that he had been duped. We think that the seed-trade is the very last business that a non-conscientious person should embark in; as, even if he had the art to make old seeds look like new, and the address to pass them off successfully as such, he would be compelled to look out for a new set of customers every year—a matter of extreme difficulty in a trade so wonderfully cut up as this has become of late years. Anyone who can complain, with any degree of truthfulness, of a difficulty in procuring good seeds, must be very awkwardly situated, as in most localities there are to be found abundance of seed-merchants, honourable men, understanding their business thoroughly, and who are only too happy to exchange their commodities for the current coin of the realm, executing the orders entrusted to them by customers in many instances hundreds of miles distant, with extraordinary accuracy and despatch. To every farmer working his land under a fixed system of alternate husbandry, the subject of grass-seeds is one of peculiar interest, as non-success in growing them as they ought to be grown is almost equivalent to total failure in the entire business of the farm. The modern system of laying down land to pasture for a few years, with a selection of seeds which science and practice alike demonstrate to be suitable to the peculiarities of the different soils, is the real ground-work of successful cultivation. It embraces two objects, both of the utmost importance, viz., providing a supply of wholesome and nutritious food for the live stock of the farm, and recruiting and renewing the energies of the soil. For both purposes this system is eminently serviceable, and no corn-growing farmer can afford to neglect it, or view it as a thing of only secondary importance: if he does so, his interests will suffer correspondingly.

To have the soil in a fit state for the reception of the grass-seeds and clovers, there are a few points requiring attention, one of the most noticeable being its manurial condition. If land is laid down to grass poor, the seeds may hit fairly enough; but when sufficiently advanced in growth to be able to absorb nourishment from the soil, the progress of the plants is at once checked, and they become stunted; the hardier varieties may maintain a languishing kind of existence, but the better sorts die out in the absence of proper nourishment to maintain them in a healthy and vigorous state of existence. The land is thus left bare, or what is equally bad, or perhaps even worse, gets covered with the coarser varieties of the natural grasses; many of which are so bitter that the stock will only eat them when compelled to do so by hunger. In a case of this sort the period that the land remains in grass is pretty nearly a total loss, instead of being the most remunerative in the rotation. The proper quantity of stock required to make it pay cannot be kept for the want of food, and the farmer is only too glad, when the time arrives for ploughing it up, to get it out of his sight, and for that purpose will often anticipate a year, if his arrangements will permit him to do so. A crop of hay attempted to be taken from a field laid down in an exhausted state is a miserable affair, and speaks volumes to its owner on the necessity for improvement. Since the introduction of guano and other artificial manures, and their coming so extensively into use amongst agriculturists of all grades, there is often a great temptation to a struggling farmer to lay down after a green-crop, which has been grown solely with these manures, even when the crop has been drawn off for consumption in the yards. When the land is very fresh and naturally good, such an innovation may very possibly be attended with no very serious results, when done merely for a crop of hay and one year's grass, and then broken up to be put through a renovating process to make up for previous neglect. A really good farmer may, for certain temporary motives of convenience, do this, without in any perceptible degree injuring the permanent resources of the field which has been experimented on; but it is very different when the same process is gone through on land, the stamina of which has been injured by a long course of bad usage, consisting principally of taking as much as can be got, and giving as little as can possibly be given in return. On such soils there is no humus from which the young plants can extract sufficient nourishment to support and continue a healthy existence, and it is therefore utterly impossible that

there can be any return. If by chance a little crop of hay is managed to be taken, growth, from the moment it is cut, ceases, and it will lie for years without producing food enough to support a sheep to the acre with a bare existence. On most light lands, it is very injurious to the succeeding hay and grass-crops to take the second corn crop before putting in the grass-seeds, however good the treatment may have been when in preparation for the green crop. Corn succeeding corn reduces the soil wonderfully, and leaves it in a state more fit for the application of manure than for the successful culture of grasses and clovers. There are undoubtedly soils to be met with, that are almost too rich for laying down at once after a well-manured green crop, and bear without apparent injury wheat and barley in succession, before being laid out to grass. These soils are, however, exceptional, and we look upon it as exceedingly dangerous policy to attempt the second white crop upon the greater portions of light friable soils. A farm of this sort, not generally possessing any great depth of soil, is necessarily just as it is made by the man who holds it, and if for present gain an extra crop is taken, the future crops must inevitably suffer. Even passing over the injury to the intervening pasture, the straw of the breaking-up crop will be soft and flaccid, and the corn light and chaffy, deficient sadly in both bulk and quality to what it would have been, had the second corn crop not been taken.

We know several farms of capital land, capable of growing every kind of crop, on which we have seldom seen a field of grass that could be truthfully called rich and succulent since the system was introduced of taking the second white crop before laying down. On one farm, paying a rent of £3 12s. 6d. the statute acre, the hay crop last year was so noticeably light as to call the serious attention of the tenant to the subject, on a breadth of about sixty acres there being a rich of hay that turned out scarcely eighty tons, when, from the character of the land, it might reasonably enough have been expected to make as much more. Estimating the injury to the hay crop at £5 per acre, the price of say 1½ tons of ryegrass hay, it will be seen at a glance that in this instance the profit of the second white crop was entirely absorbed by the loss on the succeeding season's hay, and this, too, without taking into consideration the still further loss by exhaustion of the soil. When a second crop is taken, there is always a difficulty in preserving thorough cleanliness, pastures so laid down being very often white till a late period of the spring—a sure sign that couch and other kindred grasses are in possession. Next to having the land in good manurial condition, it is absolutely necessary to secure a successful hit of the small seeds, and correspondingly good hay and pasture, that there should be complete freedom from weeds. This can only be accomplished by the most rigid attention to the point during the cultivation of the green crop; and if the hand and horse-hoe and drill-grubber are kept in constant requisition until the plants close in the drills, there is little danger that the land will be found in a foul state when spring comes round. When the seeds of the grasses are not put in at this stage, but postponed until another year, it is almost impossible again to attain to the same state of cleanness, and complete absence of weeds.

Apart from all other considerations, we look upon the presence of weeds as one of the commonest causes of non-success in growing profitable crops of hay and succulent pasture. Docks, thistles, and rag-weeds, being large plants standing clear of the surface, can be comparatively easily extirpated should they show themselves: it is the smaller weeds, and particularly couch and the coarse unprofitable grasses, which cause most mischief, as, if they once get a lodgment, they make it a permanent one, and speedily cover the field with quite a network of their roots and fibres. In a field of young grass being grazed, it is always a bad sign to see tufts of dry grass dotted here and there over its surface: they ought not to be there, and would not, had the land been laid down in a cleanly state. When there is nothing present but the cultivated grasses, the stock eat it down as evenly, and leave it with as smooth an appearance as if the scythe had passed over it. When the corn is cut, it is a most provoking thing, and very suggestive of previous neglect, to see a lot of useless weeds, instead of a valuable and beautiful mixture of clovers and grasses, requiring only the removal of the corn to enable them to start with renewed vigour and cover the land with luxuriant herbage.

Some men get very dispirited when any irregularity of this sort occurs in their business, and, if they could consult their own wishes, would keep out of the way altogether, busy time and all as it is, rather than remain on a field the unsightly appearance of which calls up such an amount of unpleasantness.

Autumn-sown wheat is on most land a dangerous crop to lay down with, the surface of the soil having been so long exposed to the weather; and to a very considerable extent having become caked and hard, it requires a great deal of harrowing to rake up a sufficient quantity of fine mould to form a suitable seed-bed. This tearing with the harrows has often a most prejudicial effect upon the grain crop, lightening it to a serious extent; and, after all, the seeds are not nearly so successful as when put in with a spring-sown crop, whether that be wheat, barley, or oats. The long exposure to the vicissitudes of the weather during the winter months has perished the surface-soil, and rendered it in a very great degree incapable of affording the necessary nourishment to the tender rootlets when they become evolved. When the grass-seeds are sown on such a surface, even although they may make a moderately good start, they have not in general the luxuriance which is so necessary for future success; and moss, the bane of pasture-land, shows itself the very first year, strengthening and increasing each succeeding year, while the cultivated grasses decrease in vigour and value in a corresponding ratio.

When the soil is one on which wheat grows profitably, and is both naturally and artificially rich, we have then an exception to a general rule; and the second white crop can be introduced with great propriety into the rotation. It is done with the double view of obtaining the advantage of a valuable wheat crop, and securing, by means of a second and spring-sown crop, a fresh bed for the small seeds.

There is a peculiarity in many rich soils which favours this system, barley being a better crop after wheat than it would have been before it; the quantity of corn not only greater, but the sample brighter and heavier—fit for malting purposes, which it would probably not have been had the soil not been reduced by the wheat being taken first. The straw is also firmer, and not so liable to lodge; thus again giving the seeds a better chance of doing well.

Barley is a favourite crop for laying down with, and the grasses and clovers very often succeed so well as to materially injure the corn, the clover at the time of harvest being, in a moist season, very frequently as high as the barley itself. On soils not altogether suitable for barley, or where for certain reasons oats are considered more profitable, this crop does eminently well to lay down with—fully as well in fact as with barley, and being, like that crop, spring-sown, presents no special difficulty in getting a good seed-bed. To ensure cleanliness when the second crop is taken, there must be an unsparing use of the broad-share cultivator, whenever the stubbles are cleared in autumn, and the surface then literally torn to pieces by the action of the harrow; and so get every weed exposed to the sun's influence, then sufficiently powerful to destroy their vitality. This is the only opportunity now afforded for cleaning the land; and if it is not taken advantage of, it will be useless to expect good pasture.

The most convenient month to the farmer for committing the seeds of the cultivated grasses to the earth is April, and it is also the most suitable for the seeds themselves. With such small seeds there is some danger at an earlier period from frosts or nipping winds, which by injuring the tender blade retard the growth of the plants, and perhaps kill a portion of them altogether. Many farmers make a point of never sowing their small seeds until the corn is well over ground, thereby giving it a start, and moreover securing a firmer bed for their reception. When the crops with which they are to be sown has been put in early in the season—say end of February or beginning of March—there is of course no other way of doing; but when the sowing of the corn crop has been delayed until the last week of March or beginning of April, we consider it excellent policy to follow at once with the grass-seeds. The land is fresh and moist, and seems at this stage to embody every element for promoting a successful hit and vigorous growth. On rich land, where the growth of straw is apt to be excessive, sowing at this period gives the seeds an equal start with the corn; and during the entire season the amount of progress made by both crops is as nearly as possible equalized.

The danger, therefore, of excessive injury, or even any at all, from the lodging of the corn is greatly less than if the latter had got the lead at the beginning. Everything possible ought to be done to give the grasses fair play, as they are so delicate in the early stages of their growth; and taking, as they do, such an important position in the economy of the farm, it pays the farmer to further their growth and welfare, even at the risk of slightly injuring the crop they may be sown with.

For some years we ourselves have made an effort to sow the small seeds immediately on finishing the corn—that is to say, any time between the sowing and its appearing above ground, according to convenience and opportunity, but never so late as to permit any injury to the sprouts of the corn by the action of the harrow. Since adopting this system exclusively, we have been most lucky, never having had a single mishap; a thick sward of delightful verdure being invariably disclosed on the severance of the corn. The feelings of all concerned when such a rich and continuously regular hit is presented, are surely in delightful contrast to what they may easily be supposed to be when, on removing the corn, large patches of the seeds are found to have been completely rotted out.

The practice of sowing the light and heavy seeds separately ought to be totally given up, as it entails a considerable amount of extra labour, the ground having to be gone over twice when once would do, and the sowing cannot be done with the regularity that is attained almost without an effort when the seeds are mixed. When the mixing has been carefully performed on the granary loft or barn floor there is no danger whatever of the clover's sinking down through the lighter seeds; on the contrary, they adhere to the grasses; and when thrown from the hand, their weight assists greatly in carrying out the other to the desired breadth. The grass-seed sowing machine has now reached such a state of perfection that it leaves nothing to be desired in the way of improvement, and answers admirably the purpose for which it is intended. Notwithstanding this, and its not being an expensive implement, the cost of one being so little as to bring it within the reach of any man of moderate means, it is not availed of at all as largely by the farmers as might be supposed. The reason for this must in a great measure be, that sowing these seeds by hand is not a laborious operation, a great breadth being seeded in one day by a single sower, and the business done to great perfection. By marking off the field into lands of eleven or twelve feet, according to the stroke of the sower, each land to be finished by two casts, the seeding can be done with wonderful precision. It is seldom that the weather can be waited for which would just exactly suit the sowing of such a light seed; but when the soil is in suitable condition the operation need hardly ever be put off on account of the state of the wind. A little wind is a great help in assisting the sower, and when it blows steadily in one direction is very inspiring; his step is insensibly quickened, and he has scarcely time to think of fatigue. Six feet at a cast is the very utmost that ought to be attempted, as, independent of the liability to miss portions, the extra effort required to cast such a light seed is very fatiguing, and has a very stiffening effect on the muscles of the shoulder. A smart man can cover a large number of acres in a day, and that too without making a violent effort. More can be done; but from twelve to fifteen acres is a capital day's work, when care is taken to do it as it ought to be done. Some sowers take up a good handful, making several casts before they again require to dip their hand into the sowing-sheet. We much prefer taking a dip for each cast, as regularity is thereby more certainly ensured. The thumb and two fingers supported by the third in a half-bent position will, with a cast of six feet, sow fifty lb. of seed to the statute acre almost unerringly. For large occupiers the machine is eminently suitable, getting over such an extent of surface in a day, and with so little trouble. In preparing the land for the reception of the small seeds, the first object is to have it as smooth and free from lumps as possible. In a favourable season, when the harrowing has been successfully accomplished, it will be mostly found quite sufficient to pass a light roller over the field before the seed is sown; but when the season has been against making a good finish with the ordinary harrow, it may be necessary to pass the grass harrows before the roller, which will in general bring it to the required smoothness. In advocating rolling previous to the sowing of the seed, it is of course assumed that when sown the seeds will be covered with a turn of the grass-harrows. Some men do not cover with the harrow at all, but

simply roll, in which case rolling before the seed would be an error, as there would then be no covering for the seed. All seeds require covering for their successful germination; and if this is not done they do not get a fair chance, and many of them perish. The grass harrow, as usually made, is admirably adapted for the purpose for which it is intended; and when the heavy roller follows, the fine particles of soil are pressed around the tiny seeds, many of which by running into little cavities might be lost but for this final operation. Considerable difference of opinion exists amongst practical men as to the best mode of treating grass-land during the first year of its growth. Some are most particular that not an animal will enter the field from the time the corn is cut until the hay is cleared off and the after-math fit for grazing the following season. Others contend that not only may light cattle be permitted to graze it with benefit to themselves and profit to their owners, but also to the manifest advantage of the grasses and clovers. Few farmers can afford to look at a fine field of luxuriant grass all the winter without being tempted to utilize it. On those farms which possess a considerable number of breeding ewes, the clover and rye-grass fields come in most conveniently with a welcome supply of succulent and milk-producing food at the very time when most wanted. Very frequently in a backward spring, when the old grass is long in affording a bite, the ewes with their lambs are kept on the young grass until far on in April, and a hay crop yet taken the same season. This, however, is stretching a good thing rather far, as the hay in this case is apt to be very thin of clover, much of it dying out from being nipped too close by the sheep. Could a better or even any other substitute be found for the flock of ewes when dropping their lambs than the young grass break, it would be advantageous to the latter; for this purpose, however, it is so useful that most farmers take advantage of it, even at the risk of greater or less injury to the seeds. Young cattle are the safest stock of all, when there is a choice, as they do not inflict the same amount of injury that the sheep do, on account of not biting so close, and their lighter weight preventing that injury from treading, which would be the unavoidable result if grazed by heavier animals. Many men are of opinion that it is better to graze the first year and meadow the second, so as to give the roots of the grasses an opportunity of firmly establishing themselves before subjecting them to the somewhat scourging influence of the scythe; the general practice, however, is to meadow the first year and graze the remaining years of the course—a system which we see no reason to condemn, as when laid down in good heart a beautiful crop of rye-grass hay can be secured at the first cutting, and afterwards a heavy crop of clover for either hay or soiling, and yet have the grazing on the following season all that could be desired by the most fastidious. The importance of a good crop of rye-grass hay and its beneficial effects on the live stock of the farm can scarcely be over-estimated. To simply say that it is superior to old meadow hay conveys but a very faint idea of its merits in comparison with the latter. Farm horses changed from ordinary meadow hay to that saved from a mixture of rye-grass and clover show a decided improvement almost immediately. An increase in the quantity of oats supplied to them does not effect a greater or more noticeable alteration in the smoothness of the coat, silkiness of the skin, increase of power, capability of endurance, and general sprightliness. We generally hold over

our rye-grass hay for spring feeding, and find that when the long day arrives, and with it a push of hard work, a liberal allowance of this hay and good hard oats, with a few crushed beans amongst them, enables a horse to get through a heavy day's work with comparative ease. Store stock can be kept in magnificent condition with hay made from the artificial grasses, thriving so rapidly when supplied *ad libitum* as to give their owner the most intense satisfaction. All other stock are affected in a correspondingly advantageous manner when supplied with rye-grass hay of good quality; but of course milch cows and feeding cows require more succulent food than hay alone to keep the one in full profit and the other progressing satisfactorily. We consider that hay, unless under exceptionally favourable circumstances, ought never to be taken off light land that is capable of being profitably worked in any of the usual modes of convertible husbandry, unless as first crop. The value of the produce for either home consumption or sale is so much greater, and, what is of equal if not even greater importance, the scourging effect of a crop of old meadow hay is saved to the land. Many landlords have a most decided objection to see hay taken from old pasture-land unless extra treatment is resorted to for the purpose of repairing the waste caused by the exhaustive process to which it has been subjected. It must be understood that this refers more particularly to all light land, worked or capable of being worked on a fixed rotation, having no reference whatever to rich soils or bottoms, land near large cities where there is great facility for periodical top-dressing, or fields that can be successfully irrigated. These all form exceptions to a good rule, which it would be well for the interests of both the farmer and his land were it more generally carried out. There is another matter in connection with the subject which we cannot close this paper without noticing, and that is the saving of the seed. To say that every farmer ought to save all the rye-grass seed he requires would perhaps be going a little too far, but the majority might do it, and thus save themselves from a considerable disbursement which requires to be made annually, and which there is no avoiding unless they take a little extra trouble and grow it on their own farms. What one man can and does do, another may do equally well if he will but try, and the saving of grass-seed is so remunerative that it is well worth a fair trial. There is no greater secret in binding and stocking an acre of rye-grass than in performing the same operation on an acre of oats. When properly matured, it is not much extra labour to have it removed to the barn, and there carefully thrashed out, either by stick, flail, or machine, according to the quantity required to be done; the seed being at once spread thinly out on an airy loft, and the hay removed to where it is to be built up until used. When thrashed and laid on the loft a little attention is required, and must be exercised, in having it turned frequently—at first once a day, twice even, if suspected to be at all damp, extending the time as the condition improves—until at last it is known by the feel and peculiar *rattle* that it is thoroughly seasoned, when it may be stored for future use. Many an industrious man who, devoting a little time and attention to the saving of a few acres of pure grass-seed, not only supplies his own wants, but makes it a source of revenue, finding an eager purchaser in the seed-merchant with whom he deals, whose cheque, forwarded as it generally is during the early part of the season, comes in very handy for the spring rent.

J. S.

THE NEW HIGHWAY ACT.

At the Staffordshire quarter sessions, Mr. C. W. LYON, in moving that a provisional order be made for the dissolution of the Burton Highway District, said he was prepared upon that occasion to go into the case upon its merits. When he last brought forward the question he stated that the district was formed four years ago; that it was under the management of a chairman, vice-chairman, and board of waywardens, all of whom, he might safely say, were favourably disposed towards the new act; that during the whole time no opposition was offered to it, but every assistance was given to the surveyor who was appointed; but that, notwithstanding this, the ratepayers of the

district became most decidedly discontented with the system. Strong representations were made by the ratepayers, and those who had authority at the board felt that they could not disregard them. A meeting, attended by the representatives of every parish, was appointed to inquire into the complaints, and the result was a unanimous determination that it would be for the interests of the district to obtain a dissolution. He came to a previous court with a resolution to that effect; but in consequence of the opposition of his friend Mr. Bass, who he might say had a strong predilection if not prejudice in favour of the new act, it was plain to him that there was an indisposition to

pay that attention to the representations of the ratepayers to which he thought they were entitled.

The CHAIRMAN (Lord Lichfield) said the subject was deferred in consequence of an irregularity in the proceedings.

Mr. LYON said that at any rate the discussion was suddenly put an end to, and therefore the members of the court generally were not afforded an opportunity of expressing their opinions upon the matter. Since that occasion there had been no diminution of hostility to the new act, and he was prepared now to lay before the court statements which would, he thought, fully and unmistakably express the opinions of the ratepayers, which he considered should not be disregarded. Mr. Lyon referred to a discussion which had taken place on a similar question at the Norfolk sessions, and, with reference to the discontent which the working of the new system had caused in the Burton district, said he could fully prove that such discontent was general. The rateable value of the whole district was £86,425, and memorials in favour of the dissolution of the district had been signed by persons representing a total of £46,358, exclusive of cottagers and other small holders. He would also lay before the court a comparative statement as to the expense of managing the district under the Act of William IV., and under the new Act of Victoria. Mr. Bass, at the last discussion, differed from him as to the comparative cost of maintaining the roads under the two systems, and in order to set the matter at rest it was decided at one of the waywardens' meetings that a competent person should be appointed to furnish a correct statement. This statement showed that the expenses incurred under the new system in the three years 1865, 1866, and 1867 exceeded the expenses incurred under the old system in 1861, 1862, and 1863, by £527, or 32 or 33 per cent., the total expenditure for the three earlier years being £1,630, and for the latter £2,157. Mr. Ross, the late surveyor of the district, said these figures were not correct; but it might be stated that he had put himself very much in opposition to the waywardens, and done all he could to thwart them. Having alluded to proposals made for the dissolution of districts in the counties of Derby and Worcester, Mr. Lyon stated that Sir Thomas Gresley, who had taken an active part in forming a new district in the former county, in direct opposition to the wishes of the ratepayers, had admitted to him that the act was a failure. He (Mr. Lyon) would not give in to any man in a desire to make the new act work satisfactorily in the Burton district, but he was satisfied that it was impossible to do so, and he therefore asked the court to yield to the strong representations he had made on the part of the ratepayers. He did not hesitate to say that the roads were in a worse state than they were under the old system.

Mr. WILLOUGHBY WOOD seconded the motion. He constantly travelled upon the various roads in the district, and he might safely say that, so far from their having been improved, they were now in a worse state than when the district was formed. It might probably, he observed, be desirable to form the whole country into highway districts, but isolated districts such as Burton-upon-Trent would never work well.

Mr. M. T. BASS, M.P., said he was under the necessity of contradicting his friends on several points. They had given the Court an account for three years only, whereas the district had been formed for four years; and the late surveyor (Mr. Ross) declared that if the first quarter of the first year and the three quarters of the last year had been included, they would have made a very serious difference in the general results. Even upon the most exaggerated estimate of expenditure the cost had been less than £7 a-mile. He remembered that a very interesting discussion took place at Wolverhampton in the autumn with regard to Mr. Hugeson's Bill now before Parliament, and Mr. Masfen, of Pendeford, in order to convince the meeting that it was very undesirable to abolish turnpike roads, stated that the expenses of keeping up the roads in his parish were only £11 a-mile. Certainly the Court would admit that £7 a-mile was not an extravagant sum to expend upon roads where there was a very great and increasing traffic. There had, without doubt, been a very largely increased traffic upon the roads within the Burton district the last four years, and there had also been a large increase in the price of labour. With regard to the condition of the roads, he was entirely at issue with his friends (Mr. Lyon and Mr. Wood). He spent half his life on the roads, and he affirmed, and could produce testimony in support of his assertion, that the roads had very greatly improved. He had travelled that day a considerable

distance along the roads, and they would bear comparison with any in the county. He would refer to a letter he had received from a member of the Court who could not be present—Mr. Webb (Mr. Lyon's brother-in-law), than whom, it would be admitted, one more competent to give an opinion upon the subject could not be found. Mr. Webb stated that if all the petitions were similarly signed to the one sent from Tutbury, they were not worth the paper they were written upon, as he was satisfied that he could get a counter petition, representing a larger amount of rateable value and more intelligence. Mr. Bass went on to observe that the new system had not had a fair trial in the Burton district. Nothing could be worse than the old system. He considered that the roads were far better managed than under the old system. Under the old system there were 36 surveyors. Surely they ought to be worth something; and if they were paid only £4 each this would make £144, which was saved by having one surveyor.

Mr. Bass, resuming, said that with regard to the four years not being given, Mr. Coxon, a most able and intelligent man, told him that it was not possible to get the accounts for two years under the old system, as they did not exist. What a condemnation this fact was in itself of the old system! There again he must appeal to the evidence of Mr. Boothby, who had been writing very able letters on this subject in the newspapers. Mr. Boothby stated that nothing could be worse than the old parish system, and that one of the most radical and unpardonable defects was that the ratepayers could never get any audit of the accounts. The assessment was made and the rate was paid, but the ratepayer never knew how the money was expended.

The Hon. and Rev. A. C. TALBOT said he was a surveyor himself, and he was obliged to take his accounts before the magistrates.

Mr. BASS said he did not state that the accounts were not passed by the magistrates, but that they were not properly audited. He could offer the Court very strong testimony as to this want of audit. Mr. Coxon, now clerk of their district, and formerly clerk of the parish of Burton, assured him that he had himself expended £1,000 in repairs of the roads in the parish; and although that large sum was found by the ratepayers, he was not able to get a sufficient number of them to audit and pass the accounts. With regard to what Mr. Lyon had said as to the Act not being successful elsewhere, he had scores of letters from different parts of the country which told a different story. Letters from Cheshire spoke in terms of the highest eulogium of the action of the system there; and he had a long letter from Mr. Pease, M.P. for Durham, who observed, "Surely you will never take so retrograde a step as to go back upon that stupid old parish system." Another well-known member of Parliament, with whom many members of the Court were well acquainted, told him on Friday night that he was formerly very much opposed to the new Act, but that the experience he had had of it in the northern counties convinced him that it was the only thing to be adopted. He wished the Court to consider the position they were in with respect to anticipated changes. They were aware that there was a bill before Parliament for the abolition of turnpike trusts, and that the Home Secretary also stated that he had prepared a bill upon the subject. He had some conversation with the right hon. gentleman upon this matter on Friday night; and Mr. Hardy, although he would not give him permission to say that he thought it would be a very undesirable step for the Court to take to dissolve the Burton district, said in a very significant manner, "You know when I introduce the Highway Bill I desire that it should be made compulsory. I think that is what we ought to come to." (Hear, hear). Mr. Hardy mentioned another difficulty that might arise in the case of parishes which threw themselves out of districts, provided any general abolition of turnpike-trusts was to take place. Each parish would have to pay for the repairs of the turnpikes that passed through it. Mr. Wood had said a good deal about the condition of the roads, but it appeared that the waywardens would not find sufficient metal. The overseer gave in an estimate of what would be required to put the roads in good condition, but the board denied him the money.

Mr. LYON: I must contradict that.

Mr. BASS said that the sum of £150 was deducted from the estimate. It was a mistake to assert that the gentlemen who formed the board were well disposed towards the system. He had attended a few meetings of the board himself; and he was

quite sure that all the farmers were opposed to the system from the first, and were very glad indeed to find some grounds for condemning it. Of this he was perfectly certain. The farmers did not like these matters to be removed out of their own hands. One could not wonder at this feeling; and as they were the principal ratepayers, they had a right to be considered. Still, he was perfectly sure that farmers were more indifferent to good roads than some members of that Court would be. The board complained of their late surveyor, thinking that he had not done them justice, and had neglected his duties, and had appointed a man after their own heart to succeed him. Considering the changes which were about to be made in the general management of highways and turnpike-roads, and considering that these gentlemen had now got a surveyor who enjoyed more of their confidence than the last had done, surely the Court would be of opinion that it would be premature to dissolve this district. He therefore proposed that the question be adjourned *sine die*.

The Hon. and Rev. A. C. TALBOT seconded Mr. Bass's amendment. He considered that as the Court had not before them a statement showing the expenses of the roads for several years before the adoption of the Act, and the precise state of the roads then and at present, they were not in a position to come to a right conclusion in the matter. He had had some experience himself in these matters, and he knew that it took four or five years to get roads into good order: and from the moment that they were properly repaired and drained, the expenditure began to diminish. The experience of two, three, or even four years, was not sufficient to enable them to come to a right conclusion. For this reason, he considered Mr. Lyon's motion premature.

Major CHETWYND supported the original motion, and Captain JOHNSON the amendment, the latter gentleman observing that nothing could be worse than the old system, under which the surveyors could hardly be induced to spend any money, and what they did spend was frequently spent injudiciously. He knew of one parish in which there was an expenditure of £45, £22 of which had been spent in the carriage of £10 worth of materials (Mr. Bass: Hear, hear).

Mr. I. SPOONER observed that the Court were bound to deal with an application of this nature in a quasi-judicial manner, on evidence offered before it. There was great difficulty in arriving at a proper conclusion, inasmuch as the Court had before it little more than assertion against assertion; but inasmuch as the application for a dissolution came from five magistrates who resided in the district, and represented a large body of the rate-payers, to whose representations the Court were bound to listen, he thought the application must be granted, especially as that course would afford the means of having the matter properly discussed hereafter. If Mr. Lyon's motion were carried, it would only amount to the granting of a provisional order for the dissolution of the district, and when the applicants came forward for a confirmation of the order, the Court might demand evidence in support of their case, and thus put themselves in a position to decide fairly in the matter. He thought that the five justices were entitled to have a provisional order made almost as matter of right, but when the order came on to be confirmed the Court might take into consideration every new fact that was brought before it, and the gentlemen who were now making assertions one against another would act wisely in bringing forward evidence to support their respective views.

Lord HATHERTON called the attention of the Court, in the hope that his observations might through this means find their way to the public, to the frequent transgression at this time of the year of sec. 51 of the 27 and 28 Vic., cap. 101, which provides that any person removing soil or turf from the side of any carriage or cart way, except for the purpose of improving the road, by order of the surveyor, shall be liable to a fine and to pay the expense of remedying the injury. He said he had drawn the attention of the surveyors to the section by having it printed and circulated among them in his own neighbourhood; but year by year, throughout the county, he found the roads seriously damaged and rendered unsafe by the practice common among farmers of taking turf from the side of the road adjoining their land, they no doubt conceiving they had a right to do so, and using it for repairing their fences. His lordship hoped that magistrates would put the clause in force (Hear, hear), and in conclusion expressed a strong opinion against the practice of raising roads in the centre, observing that there were no

better roads than those which were perfectly flat, stating that the water would find its way from them by the usual ascent or descent.

The CHAIRMAN said he was very much inclined to concur with what Mr. Spooner had said with regard to passing a provisional order, but if the motion before the Court were one for granting a formal order he should be strongly opposed to it. He thought it would be extremely inadvisable to this county if they were to give up the Act as a failure after a trial of only four years. He did not think that that trial was sufficient, because during the first three or four years there must inevitably be a considerably increased cost in the repair of the roads, unless at the time of the formation of the district they were in a satisfactory state. He did not think that they had satisfactory evidence before them with regard to the condition of the roads now and before the formation of this highway district. The memorial that had been presented from a large number of the ratepayers of this highway district did not at all touch the question.

Mr. LYON said that the representations in the petition were very strong.

The CHAIRMAN said that, even supposing that to be the case, he did not think the Court would act wisely in at once sanctioning a dissolution upon that petition, because he had no doubt that, if an attempt had been made to obtain the ratepayers' opinion before the Act was tried, the result would have been precisely the same ("Hear, hear," from Mr. Bass). Therefore, he thought it was altogether beside the question to take into consideration that opinion of the ratepayers. He said that without the slightest hesitation, because, at the time it was proposed to adopt the Act for the whole of this county, a very strong remonstrance was made on the part of the ratepayers, and the subject was dropped. But when they had adopted this system in one district, it became a very different question indeed how far they were right in meeting the views of the ratepayers unless they were perfectly satisfied that the question had been fairly tried. He inferred from what had fallen from Mr. Lyon that the experiment had been very unfairly tried, and that it could very easily be shown that it had failed in consequence of mismanagement ("Hear, hear," from Mr. Bass). He had very little doubt in his own mind that wherever the Act had been a failure, the failure was attributable to bad management, for that the system was perfectly sound he had no doubt whatever (Hear). There would be several questions upon which the Court would have to satisfy themselves before passing a final order. It appeared to him that in order to secure the efficient working of this system it was absolutely necessary for the waywardens to work harmoniously with the surveyor. He should like to know whether this had been done in the Burton district, and whether the waywardens had given the surveyor that assistance which was necessary in order to make the working of the Act efficient. [Mr. Lyon: "Most certainly."] He should also like to know what superintendence there had been, what salaries had been allowed, and whether the work done on the roads had been done by contract or otherwise. The question of turnpike roads and trusts throughout the whole county must be dealt with generally before long, and he hoped that Parliament would act with a little more wisdom than it did in the matter of this last Highway Act. It appeared to him that if this system was right—as he firmly believed it to be—the Act ought never to have been passed as a permissive Act, but ought to have been compulsory (Hear, hear). He sincerely hoped that when Parliament dealt with this subject again it would not leave it to the quarter sessions to decide whether the Act should be adopted in any particular district, or whether, as in the present instance, any district already formed should be dissolved, and so give rise to discussions which were, to his mind, most unsatisfactory (Hear, hear).

Mr. LYON said that if the Court would grant a provisional order every possible inquiry should be made previous to the application for confirmation, but such inquiry would only result in the obtaining of evidence similar to that which he had already laid before the Court in such abundance. He might state that he himself had been appointed chairman of the waywardens against his will.

On the question being put 21 votes were given for Mr. Lyon's resolution for the granting of a provisional order for the dissolution of the district, and 10 against. A provisional order was accordingly made.

THE MANGOLD CROP.

This is becoming the most important root-crop for home-consumption which a farmer can grow. It is easy of culture, and the weight of roots grown per acre exceeds that of any other crop, and, under proper course of administration, to stock it is perhaps the most valuable and nutritious. I make this latter remark because one of its great constituents is water, and, if given to stock liberally before this watery characteristic is in part dissipated by keeping or storing, it will rather prove injurious instead of beneficial; but if after storing while it is given in moderation, along with hay, straw, or other dry provender, it proves highly nutritious. One of its most valuable properties consists in its peculiar adaptation for long and safe storage. It is really improved by it; and roots securely put into grave in the autumn will come out the following Midsummer containing more nutritive qualities than when put in, and forms an admirable substitute for grass in a backward or untoward season.

The varieties brought into general cultivation are many, and great care is requisite in selecting a good stock, as upon this one point much depends. Some varieties will produce a crop three-fold the weight of inferior stocks and fully as nutritive; some varieties are best adapted to thin soils, others to good loams and medium soils. The chief varieties for field-culture are these—long reds, red bugles, red globes, long yellows, yellow globes, Silesian whites, red beets, and orange globes. The small sugar beet is not profitable for field-culture for stock, however desirable for sugar; nor is the small red beet named, but is chiefly grown for table and pickling purposes. The Silesian white beet is, I believe, the true small sugar beet; but I have grown white beets which have reached a good size and weight, but not equal to some other varieties. The long reds grow well up from the ground, nearly perpendicular, and attain great size and good quality. The red bugles, or "cow-horns," are a capital sort; they grow irregularly over the land in various shapes—cow-horns, bugles, crescents, uprights, layers—in fact, lie all over the land in all directions and forms, and take such little hold of the soil that a child may pull them up; they are of excellent quality, very productive, and not very exhaustive. The red globes vary much; some stocks are very good and grow to a large size; others grow slowly and are unproductive; upon the average of soils the globes do not yield so well as the long varieties, but they are better keepers in the spring, and are more suitable for thin soils. The long yellows are very productive; the best sorts have been found to exceed all others in weight per acre; they grow up nearly straight, expand greatly, attain to great weight, but they contain more water than any other variety; very heavy crops of this kind have been realized—i.e., from 45 tons to 60 tons per acre. The yellow globes are also a superior kind, but, like the reds, the stocks are very unsatisfactory; some are very prolific, others not worth culture; the best kinds attain great weight and are of good quality. The orange globe is merely another name for yellow globe, although of deeper yellow, in which respect many of the sorts differ; these are well adapted to their soils, and are even better keepers than the reds, owing to excess of their constituent waters.

The soils most suitable for the growth of mangolds are mild loams of good quality, high in fertility and condition; but they will grow advantageously upon almost any soil with proper care and management. The great thing required is to obtain a truly good pulverization, so that every particle of a soil, particularly of a stiff soil, shall be sufficiently comminuted, i. e., nearly reduced to dust and small clods: all the milder soils to be more partially comminuted, but not reduced to dust. They should

all be thoroughly worked to a good depth and fine tilth, but not so fine as to endanger the dusty soil running together into one muddy mass upon, or in consequence of, a heavy fall of rain. It is better to continue an admixture of small chequery clods, so that all may be kept open and free to imbibe atmospheric influences. On all good and open loams the preparation for this crop is of easy attainment, and the most popular mode of putting in the manures and seed is upon the ridge system, which I need not here describe, it being so well known. The ridges on these soils need not exceed twenty-six inches apart, to be well turned up at a considerable depth to a point at top; about from twelve to fifteen cart-loads of well-rotted dung should be deposited along the bottom, and the ridges split, and turned upon it to the same depth, and pointed top. The field roller should then pass over it, taking three ridges at once, which will make it ready for the manure drill and seed. Many growers in the present day add artificial dressings upon the fold-yard dung, and to great advantage. Some will sow from four to seven cwt. of salt per acre upon it; others, three or four cwt. of Peruvian guano. The latter is an expensive application of doubtful character, because the quantity of ammoniacal aids contained in the fold-yard dung may be sufficient without it; others will sow from three to five cwt. of superphosphate, or other of the many manures offered to the public. My own favourite practice is to sow four or five cwt. of salt along the rows upon the manure; plough all in immediately in a good form of ridge; roll them down, and drill in at the same time about four cwt. of superphosphate, mixed with from 20 to 40 bushels of ashes and 4lbs. of good seed per acre, my occupation being a useful loam upon a sandy subsoil. On good rich loams this costly application is unnecessary, as it would most probably cause many bulbs to run to seed; a fair, reasonable dressing is all that is needed. On poor soils, not only the above, but every other aid should be given that the farmer can command, to secure this valuable crop. For poor, or indeed ordinary clays, autumn culture and preparation is very desirable, and the ridges should be both wider and higher. The manurings should be as above, and the more salt and ashes the better. The salt appears to keep the land somewhat moist beneath, which materially aids the progress of the plants, as also contributing to feed their watery nature. For these sandy and gravelly soils the preparation is simple enough; the great thing is to obtain sufficient mould to form a good ridge, and cover a good deposit of manure. Ridges 30 inches apart would be requisite on such soils, and the fold-yard manure should be more decomposed and somewhat less of it used. The other artificial aids would be amply repaid in the crop. On soils liable to burn and be seriously affected by droughts, it is best to put this crop in "on the flat." The same preparations and manurings should be followed, or the crops will not be good; and a good crop is everything in mangold culture, as providing a large amount of food and wonderfully enhancing the manure heap, leaving only the question of cartage of roots and manure. The time of sowing or putting in these crops will depend mainly upon soil and climate; on poor soils and cold situations the seeding should not be later than from the 10th of April to the 1st of May, the earlier the better; on good soils and favourable districts the seeding should be between the 21st of April and the 21st of May, not later; but fair crops are grown in some districts from this late sowing. It is desirable to steep the seed, which is woody, before sowing.

FARM ACCOUNTS.

At the monthly meeting of the Cirencester Club a paper was read on "Farm Accounts," by Mr. H. Tovey, of Stanton, who said: The subject of Farm Accounts and the best way of keeping them is a wide one; one, too, that has been hitherto much neglected by those whose interests are much affected by it, viz., the practical farmers of England. We have had many farm account books published, but few definite systems introduced. Some authors have attempted too much, and produced complication; others too little to achieve a satisfactory result. It is a subject, as to its general and practical application, that is still in its infancy. I cannot then presume to give information to you, who are men of so much more experience than myself. I intend merely laying before you a few fragmentary ideas, not assuming that they shall be correct, but in the hope of exciting a profitable discussion, for I believe more in the contact of mind with mind, than in the exhaustive treatment of a subject which leaves nothing unsaid. Without further preface I enter upon my subject, which I will divide into two parts: first, "The necessity of keeping accounts in the farming business;" second, "How they should be kept, so as to show the farmer what is his yearly profit or loss." I shall treat both divisions very briefly. First then I submit to you, gentlemen, that good accounts, if not absolutely essential to success, are at least a great help in attaining that object, and must be a great relief to the man of business, he knowing that each transaction is committed not to the chance of memory, but so recorded that it may be referred to at will. They also enable a man to know his position, and ascertain from year to year how his business is prospering, whether it is remunerative or otherwise. In these days, when labour and other expenses rapidly increase, and new theories are advanced—when each one is trying experiments to discover the best means of increasing his income—accounts are doubly necessary, that the farmer may know which plan pays best, and so check reckless and unprofitable expenditure, and increase that which is remunerative, true economy not being always the smallest amount expended, but the best results obtained at the least cost. Again, the farmer's business is so fluctuating, that without accounts, well kept, it is almost impossible for him to estimate his income so as to keep his family expenditure within proper limits. Of course I refer here to those farmers who are entirely dependent for their living upon their business. Some may think that when corn sells well, they are prospering, and that when the price is low they are going to be ruined; but the high or low price of corn alone is not an infallible index of a large or small balance. I will give an instance. In the year 1859, on a farm of which I can speak from personal knowledge, there was a full average yield of wheat, barley, and oats, which was sold at a moderate price. The balance of the year's account was not so good as that of the following year, 1860, when the average yield of the corn crops was less, and the average price of wheat sold off the farm rather more. You may say that the lesser yield of 1860 was counterbalanced by the higher prices obtained. Granted, but on the same farm in 1861, the wheat sold averaged a still higher price, but from other causes the balance was very much less than in either of the preceding years. I am not at liberty to give you the particulars of the case I have cited; I only mention the fact, that on a given farm, of three years' balance, the gross profit of the business was least in that year when wheat sold best, to prove that the high or low price of wheat alone is not an infallible guide as to the pecuniary results. In the second year, with a higher price, the balance was better; while in the third, with a still higher average price for wheat, the profit was the least of all. In this case how could it have been known where the difference lay, and what were the causes of these results, if clear accounts had not been kept? One year the wheat crop pays best; another, the barley crop; in a third, the mutton and wool, or the dairy produce makes up for a deficiency in the corn crop; perhaps a fourth is below par in everything. In any case a clear account shows where the shoe pinches. I grant that you may make a series of

shrewd guesses without accounts, but that is not accuracy, and when we consider that a few small accounts, added to the debit or credit side of the account, make together a considerable difference to the final balance, I think it will be acknowledged that accuracy is the most desirable. I fear the farmer can hardly keep such an account as will show him the exact amount of his property at any given time without a vast amount of trouble, and I think that for all ordinary practical purposes it is sufficient if he can tell with tolerable accuracy what is his yearly balance. For him to ascertain the exact amount of his property he must go into acts of husbandry and other matters, which would complicate an ordinary account, his capital being locked up and not readily available. I have met with some farmers who cherish the idea that their bank pass-book is sufficient account, and assume that if their balance there is large, they are in a prosperous condition. Now a tolerable amount to the good in the banker's hands is, no doubt, a very comfortable sort of thing, but is it a correct way of ascertaining what progress we are making? I think, not. Is it not possible, from different causes, for a man's balance in his banker's hands to be larger than usual at one particular time, and yet for him to have made but little profit in his year's transactions? It may be a temporary increase by the conversion of a portion of his capital employed from stock to cash, and which he will re-invest at the first fitting opportunity; or, on the other hand, he may have made a good profit during the year, and yet his bank balance may be small, from his improving his land, or increasing his stock, which would be fully shown in a correct account; or he may have bought a steam plough, or made some other costly investment which would not appear in the account current chargeable to that particular year, but would be charged perhaps to the capital account. It would be merely a conversion of capital from cash to stock—the same thing in another shape, but the banker's account would not show it. I conceive it is rather by a faithful register of every business transaction, large or small, duly classified under proper heads, that a man can tell accurately whether he is making a profit or sustaining a loss. It has been remarked by a few, "Why trouble ourselves with accounts? our fathers did well enough without them." True, and all honour to them for what they have done; but this is an age of progress—because our forefathers thrashed their corn by hand-labour, shall we ignore steam-power? It is well known that farmers, as a rule, have not kept good accounts; but there is a daily-increasing feeling that they are necessary, and I believe the day is not far distant when a knowledge of farm accounts will be considered as essential in that business as single and double entry in the commercial world. It has not arrived yet, but it will come. It was once remarked to me by a farmer, "I am afraid if I kept strict accounts, my balance-sheet would show but little profit;" but it must have been meant in joke, for would that be a sufficient reason for not doing so? Who would not rather have a foe whose movements are open and well known, than have to contend with "a snake in the grass"? So with a deficiency in our balance-sheet: better to know our difficulties; we can then analyze our expenditure, scrutinize our transactions, and see whence the loss arises, and then we may hope to remedy it; and I take it this can only be done satisfactorily by keeping good accounts. I now come to the second part of this subject, and inquire what is a business account? In its simplest form it is a record of all you receive and all you pay away, the difference between the total of each being your profit or loss, as may be. A friend of mine, a Wiltshire farmer, once showed me his father's farm accounts of some 40 years ago. They were kept in this way, and were a marvel of neatness and accuracy for those days. He valued all his stock every year, and placed the amount to the credit of the closing year, and charged the following year with the same. This would be far better than keeping no account at all. It gave an idea of the state of things; but still there would have been this defect, there was no analysis. We require the record of our transactions to be classified so that we

may at once place our finger on a given item, and decide "this is too much," "that is unsatisfactory," "this crop has produced so much," "that class of stock has paid such an amount," and thus we are placed in a better position to reconsider the past, and can shape the future accordingly. I submit to you that the best account is one that is simple, comprehensive, and complete—simple, that it may be easily kept and understood; comprehensive, that every item of receipt and expenditure may be brought into account; complete, because the best-kept account is the most satisfactory, and gives least trouble in keeping it. I think the mercantile systems of single and double entry cannot be strictly applied to farm book-keeping, inasmuch as the transactions of the farm cannot well be separated from each other, except for purposes of experiment, rather than common account. For instance, the turnip crop being considered the foundation of the four-course shift, is not expected to return the whole of the profit on it, in itself alone, but has to be considered as a preparation for the following crops of the course. It has been argued, too, in the same way as regards fattening sheep; they act as manufacturers of manure as well as yielding mutton and wool, and part of their profit must be looked for in the barley crop; for these reasons I submit to you, that for general purposes the farm account for each year must be considered as forming one whole, composed of parts so linked together, that they cannot well be accurately separated. On the other hand, the merchant's business is composed of transactions, the profits or losses on each of which can be ascertained separately, and here the strict system of double entry is applicable. The plan I find to be the best, according to my limited experience, is an approximation to double-entry, but before fully entering into it, I premise that whatever system be adopted, each person must adapt it to his own peculiar circumstances and way of doing business. The essential principle of strict double-entry is, as you are well aware, that every credit item has its corresponding debit entry; for instance, if you credit Jones with 100 yards of cloth at per yard, you debit cloth with the like amount, these being simple ledger entries from the journal and day-book; the final balance of the cash-book, compared with the results obtained from the aggregate of the several profits and losses on the different transactions, being the test of the correctness of the year's accounts. In farm book-keeping I suggest an approximation in this way. Suppose you buy 100 sheep of Jones, you credit him with these in the ledger, and then debit the sheep account in the farm-book with the same amount, these entries having been previously made in the day-book and copied from it at leisure, the weekly or monthly balance of the cash-book proving you right. Here you see the second entry, which in strict double-entry would be to the debit of sheep in the ledger, is made in the Farm Account Book, the ledger entries dealing with persons and showing our indebtedness to them or *vice versa*, while the Farm Account Book under different heads shows how each branch of the business has prospered, all being summed up in the final balance-sheet. I will now endeavour to submit to you a system founded in principle on the mercantile double entry, and requires the use of the following separate books: Day-book, Ledger, Cash-book, and Farm Account Book—these form the account proper, as far as the yearly balance is concerned; and I would recommend two others for reference, a Farm Journal and a Cropping Book. The foundation of all good accounts I take to be the Day-book, because in it should be entered at once and in the order of its occurrence every transaction of the business that requires to be made the subject of account, such as the buying and selling of corn, stock bought, bred, or sold, bills and accounts paid, &c., &c.; the mind is then at rest respecting it, it is registered, and each entry is posted to the ledger, cash-book, and its appropriate division of the Farm Account Book at leisure. This book is very valuable for reference, and in some cases is even good evidence in a court of law. The ledger gives in detail under every man's name the particulars of which the cash-book is a summary, and enables you to know at a glance how you stand with every person with whom you have dealt, whether you are indebted to him or he to you; and in this book you should check your bank pass-book, by giving your banker his debit and credit page, debiting him with all money paid to your account, and crediting him with every cheque you draw, thus keeping your own account instead of adopting the way of those farmers to whom I have referred in the early part of this

paper. In the cash-book all money transactions are entered from the day-book, on the debit or credit side as may be, the entries having attached to them the numbers of the folio of the day-book and ledger with which they are connected, to facilitate reference. This book treats your cash-box as a customer with whom you are doing business, you credit it with all monies actually paid and debit it with all really received, even cheques on your banker should be treated as having passed through the cash-box, by debiting the cash account with them when drawn, and crediting it with the real amount paid. Cash should be balanced with scrupulous exactness; I find it more convenient to do this weekly, and then if any mistake arises, it is the more easily detected than if left for a longer time. I now come to the farm account book. As I published one myself some two years ago, I cannot enter so much into detail under this head as I would; for obvious reasons, therefore, I must deal more with generalities and principles; but I may observe that it should be simple, and in it should be entered from the day-book every item under its appropriate heading, according to the system adopted—viz., labour, seeding, rent, taxes, bills, artificials, corn consumed, stock bought or sold, &c., &c. Even turnpike and marketing expenses should not be omitted, bearing in mind that it is no use to enter one thing and omit another. Everything must be noticed, or it will be unsatisfactory; nor should any item be omitted on account of its insignificance. The small items run up to a considerable amount before one is aware of it; none but those who have tried it can imagine how trifles swell the account. The dressing and disposal of corn should be carefully balanced as regards quantities, and that any deficiency from theft or otherwise may be instantly detected; and as regards the account itself, it may be treated in two ways—first, by leaving it open until the whole year's produce is thrashed and sold; secondly, by making an estimate at Michaelmas, or whenever you close your year's account, of all unthrashed corn, both as regards quantity and value, and charging it to the next year; and when the actual sales take place, the difference between the estimate and the amount realised will add to or decrease the balance of that year, and it becomes a mercantile transaction between the two years, each year buying of that preceding it and selling to the succeeding one. Both ways are open to objections. I simply state the alternative, leaving it for you to discuss it. A most important part of the farm account book is that apportioned to stock. All stock of every description should be valued to the debit of the account at the commencement of the year, and to the credit at its close. On this point a great difference of opinion exists: some think it should be valued at its true market value; others argue that each description and class of animals should be valued at one fixed medium price per head, according to the age and class, every year, those only actually sold or bought appearing on the face of the account at the real trade prices. For those farmers who are constantly changing their stock by buying and selling, probably the first method would be the best; but for those whose stock remain much the same at all times—who breed and sell out, as a rule, at a particular age—the latter has its advantages, as in this case the fluctuations in trade prices may cause a fictitious balance to appear. May I ask some of the gentlemen present to give their views on this especial point, as difficulties attend both ways. For ordinary purposes, the whole amount of corn, &c., consumed by stock may be charged together in one amount in the balance-sheet, instead of to each description of stock separately. I say for ordinary purposes, because, for purposes of experiment, this mode would be too indefinite. Corn grown on the farm, and consumed by live-stock, should be charged to the debit of the year in which it is consumed, and to the credit of that in which it was grown. Implements being an investment of money from which no profit is made by actual trading, may be charged to the capital account, and not to the ordinary expenditure of any one year, the tradesmen's bills for repairs showing the wear and tear—that is, assuming them to be always kept in good repair; or they may be treated in the same way as stock, and valued to the debit and credit of the account year by year. Old corn, hay unconsumed at the end of the year, or wool held over should invariably be valued to the credit of the closing year, and charged at the same price to the succeeding one. The balance-sheet of course is a summary of the preceding accounts, the sum required to balance the account on the credit

or debit side being the amount of profit or loss. I will say no more of the farm account-book. There are so many published to choose from, that each person may suit himself. I am trying to describe a system capable of general application, and therefore will not spend more time on what is but a part of it. These four I have mentioned form the account proper, and will be found most convenient in separate books, not mixed up with each other. As books of reference, two others will be found very useful—a farm journal and a cropping book. The farm journal partakes of the nature of a diary, being a record of experiments, with the dates, and observations on the different operations of the farm—in fact, of anything bearing on the business, to which it may be interesting to refer at a future time. The term “cropping book” speaks for itself. It is a register of the cropping of each field, and of any particular cultivation which it may be necessary to record, with observations thereon. Perhaps the number of separate books I have mentioned may give the idea of complication. In practice, I do not think it will be found so: the methodical keeping separate things which differ, tends to simplify what would otherwise be perplexing. My own experience points to this: On no account mix any of these things together. Nor will this system cost much time. Keep your day-book accurately, and post off the different accounts at your leisure; and I believe that an hour a week will be sufficient, on an average-sized farm, to keep all clear. In the foregoing remarks I have not mentioned family and housekeeping expenses. They should be as strictly recorded as those relating to the business; and any produce consumed in the house should be charged to the housekeeping account, treating the farm as seller and the house as buyer, so that each is kept distinct. In summing up what I have said, permit me to submit for your consideration a few general principles on which to form a system of farm accounts. First: Aim at completeness and simplicity. Second: Enter everything daily, strictly, and in the order of occurrence in the day-book. Third: Keep each year's transactions strictly to its own account, produce consumed on the farm being charged to the credit of the year in which it is grown, and to the debit of that in which it is consumed; and whatever is used in the house, charge to the credit of the farm and to the debit of the house: and whatever is unsold or unconsumed at the end of the year, value and charge to the credit of the closing year, and debit the succeeding one with the same. Fourth: Take account of every penny whether of receipt or expenditure, omitting nothing either of cash or stock, however small. Fifth and last: Balance cash scrupulously, for herein lies the test of accuracy. Gentlemen, I have endeavoured to place before you a few crude ideas on the subject of Farm Accounts; but before I sit down, I will, with your permission, notice some difficulties that have been raised. I heard it publicly stated only last year that farmers cannot comprehend account-keeping on a definite system, and are incapable of carrying it out. I admit there are many grades of intellect amongst farmers as well as other classes; but you will surely agree with me that the real difficulty lies not in the want of capacity, but in the want of will, from imbibing the notion that it involves more trouble than is necessary. If this be so, and if I have shown that accounts are essential, surely we, as a class, will not allow this stigma to rest upon us. I hope better things of the present race of farmers. I remember that it was cast upon some time since by an English writer on agriculture, that our “heads were as thick as the clouds we cultivated;” but I think they are hardly so thick as to make us neglect an essential means of success, for the want of a little trouble and application, when we are once convinced of its utility. Another difficulty has been mooted, that it would consume too much time. This I submit to you is a fallacy—the secret lies in method and punctuality. The small portions of time, odd half-hours and the like, which are too often wasted, if used would suffice for a considerable quantity of book-keeping: economy in time is economy in money. We do not consider our workmen waste their time when they grind their scythes or sharpen their sickles; why should we grudge the time that is required for accounts? True, one is prospective and the other retrospective; but they are both means to an end. I will notice one other objection, and I have done: it is this—that commercial accounts are not applicable to the farming business. I have for a long time used, and this evening have tried to explain, a system which nearly approaches it. The principle is the same, and I have proved it successful; I do not say perfect, far from

it; but as this is a subject to which too little attention has been given, there is no reason why closer investigation should not perfect it; at any rate we can adopt the principle, and adapt it each to our own peculiar circumstances. Let “Onward” be our motto, and difficulties will vanish before steady perseverance. Possibly you will not agree with me in all the views I have expressed: be it so; minds differ as well as tastes; but I trust that in the discussion which follows the right way will be shown, mental friction being the best process by which to elicit truth.

Mr. E. BOW (the chairman) said: What a farmer has to deal with is rent, rates and taxes, labour, tradesmen's bills, implements, horses, and sundries; these seven accounts, it seems to me, are very simple and all we need to have. I have kept my books on the double-entry system and have found no difficulty in it. The only difficulty I have met with has been in the corn left over from time to time. Those seven accounts include outlay and receipts for corn, sheep, cattle, and pigs. I generally value my sheep at so much every year, cows the same, putting down cows two years old at so much. If you adopt that every year you reap the advantage of the market for that year. It is perhaps desirable that we should keep accounts against every field, but I think it would be rather difficult.

Mr. W. J. EDMONDS said: Ever since I began farming I have kept a labour account, and I can tell from the entries what every man who has been in my employ has done every day for the last twenty-five years. We have for some years used a farmer's account-book; there is an account kept of the stock of different kinds, cattle, sheep, pigs, and horses, and we make an entry week by week. We can see whether our stock has increased or decreased. For the last two or three years we had had no farming account-book, for I had a system of my own, and I keep weekly accounts. I have not kept a debtor or creditor account or a ledger account, and therefore I have not been able to tell what stock has lost and what has gained. Otherwise than that I have done all that it is perhaps necessary for farmers to do. I think it possible that we might keep a better account of our general expenditure and income than by trusting to the pass-book. With regard to the yearly valuation, it would be desirable to take into account the improvement or deterioration in the quality of the stock. If they valued their ewes at 45s. each when they may be worth more it seems wrong, so that the question of valuation becomes a somewhat difficult one.

The CHAIRMAN said there could be no great difficulty in keeping a corn account.

Mr. T. ARKELL, of Stratton, said he always valued what he had, and thus it showed whether it was paying or not.

The CHAIRMAN said that with regard to his beer at the brewery, he had always in taking stock valued it for the last 35 years at the same price, because it enabled him to reap the advantage of the market. It was only desirable to value the dead stock of the farmer.

Mr. SMITH, of Bibury, was called upon, and said he had been brought up in the old-fashioned style, not taking much heed of accounts. All the stock he took was to see at the end of every year whether he had as many ewes, rams, pigs, and if he felt satisfied he had the same number on his farm that was all he troubled about. Of course he saw what expense he had been at in labour; what he had paid in rates and taxes, and other expenses. Stock fluctuated, and so long as he had got the same number of cattle upon the farm, that was what he looked to principally, he did not much mind.

The CHAIRMAN said they were very much obliged to Mr. Tovey for bringing this subject, which was an important one, before them. He knew an instance in that neighbourhood where a farmer got a considerable deduction from his rent entirely because he had got a cash account to show that he had lost money. It was David Lane, who lived at Poulton, and his accounts were kept by Thomas Brown. He went to his landlord and said he had lost money, but was not believed until he had brought his cash-book, and that revealing the truth of his statement, he got his rent reduced (laughter). He had to move “That it is desirable that all agriculturists should adopt as perfect a system of farming accounts as circumstances will admit.”

Mr. EDMONDS seconded the resolution, and also a vote of thanks to Mr. Tovey, both of which were passed.

THE ART OF CHEESE-MAKING.

A lecture on this subject was delivered by Mr. J. Harding, of Marksbury, Bristol, the well-known maker of Cheddar cheese at Turporley. There was a large and fairly-representative audience of those to whom the lecture addressed itself.

Mr. JOSEPH ASTON was called to the chair, and briefly introduced the lecturer by observing that those who were conversant with the publications which had issued from the press on the cheese-making of this country for the last few years, would know that the lecturer was looked upon as a high authority in the matter; and, though the mode of making which he had adopted differed from that practised in this country, yet he had been enabled for many years to produce a very superior article, which had realized a first-class price.

Mr. HARDING said: Ladies and Gentlemen, I appear before you to-night, I fear, not sustaining the character our worthy chairman has given me. I have certainly given some study and thought to cheese-making for many years, and I have wished to see the day when cheese-making in our country should be improved; but it still "drags its slow length along," and everywhere the inferiority of the article is, I think, the rule, and not the exception. Since I have been here to-day I have been introduced to some first-rate Cheshire cheese, and the other day at the Cheshire show I certainly saw some. I don't think that the cheese can be made alike good under every system; but still that system which shows the shortest way to make good cheese, which will fetch a good price, is the system that should be adopted. My intention to-night is not to hold up the Cheddar system of cheese-making, as I have no reason to think for a moment that we can make better cheese in Somersetshire than you can in Cheshire. What was here called "the milk-house" they in Cheshire called "the dairy-room," because they made their cheese in one room; so that whenever they spoke of the dairy-room or the milk-house it was the room where the cheese was made. Man's responsibility to God is of a two-fold character; not only has he talents entrusted to him of a spiritual nature, but also of a temporal; his intellect, judgment, and energy, which God has given him, are to be employed in the proper study of Nature's laws, where he is to search for materials which are necessary to his own sustenance, many of which only wait the application of human industry and skill to be developed. Had God given us everything perfect and finished, there would have been no need of digging in the mines of Nature for undiscovered blessings; we should have nothing to do but to partake of the perfect bounties of Providence. But this is not the case. God has given us the world only in the rough, and we are to polish it. He has given us the soil; but we are to till it. He has given us blessings, which lie hidden among the operations of his providence; but we are to search for and discover them, and apply them to our advantage. The milk of the cow is one of those blessings, although the discovery of its qualities and capabilities bears date anterior to any existing record; yet, at the present time, with our scientific discoveries and mechanical skill, we are not yet perfect in the art of cheese-making. In the milk, I believe, we have all the necessary elements, if carefully dealt with, to enable us to produce cheese which is perfectly agreeable to the most fastidious taste. How to accomplish this is a problem which every cheese-maker should endeavour to solve. I am pleased, therefore, to meet you here to-night to discuss and thus further the improvement of one of the great staple commodities of our country. In the absence of any reliable statistics on the subject, I set down the quantity of cheese made in Great Britain at about 80,000 tons, representing a money-value at 3½ or 4 millions. Of this vast quantity of an improvable commodity, it is astonishing to find how large a proportion is of an inferior quality; I very much question if more than 2 per cent. is really fine. The effects of this inferior cheese is not felt by the community so much as it is by the individual maker, whose returns will necessarily correspond with the quality of the cheese he produces, presuming he makes full-milk cheese, i.e., cheese having all the cream in it. In fact, it seems but little use to

make cheese from skimmed milk, since even some of our work-houses decline to purchase it for the use of the able-bodied paupers and vagrants, the latter of whom are generally made up of the off-scouring of society. Why these characters should have food provided which their own dissolute habits deny them, I leave the ratepayers to answer, and to consider the propriety of asking the Legislature to transfer a portion of the increasing burden of the landed to the moneyed interest. But to return. It may be expected that one who takes upon himself to speak on the subject which has called us together this evening should be conversant with not only the constituent properties of milk, but with the chemical changes to which it is subject during and after coagulation, for the purpose of making cheese; but as this chemical knowledge cannot easily become practical (at least to the common dairy-maid, and is not absolutely necessary) I shall only make a few remarks on that score, which appear to me to be indispensable to this lecture, and which I borrow from Dr. Voelcker's excellent papers on the "Composition of Milk and Cheese," which appear in the 1st part of the 22nd volume of the *Journal of the Royal Agricultural Society*, to which I refer the practical cheese-maker who would wish to call science to his assistance and blend it with his practice. The discoveries which chemistry has brought to light respecting the elementary constituents of milk are easily condensed and simplified, so as to be grasped by any ordinary mind, and applied to advantage. Milk is composed of milk sugar, whey, caseine, and butter, held in a liquid form, generally in an alkaline state. An acid introduced, either from natural or artificial causes, effect their separation by converting the milk-sugar into lactic acid, which in its turn acts upon the other constituents, which enable us to secure the caseine and butter, and amalgamate the two and make it into cheese. Here, then, we have a sufficient knowledge of the nature of the material upon which we have to operate for all practical purposes. This knowledge, together with my own practical experience, is the basis upon which I intend to found my remarks, and to deal with the subject in a simple and practical manner. The first thing that presents itself to our notice is the preparation for making cheese. There should be a proper dairy-room; but this indispensable item in dairy practice, as a rule, is wanting throughout the length and breadth of our land, in the absence of which there can be seldom a guarantee for making good cheese. The milk, so delicate in its nature, requires to be deposited in a place entirely free from every impurity; the floor of the room should be clean, and every precaution taken to render it dry. Cement should be used where necessary, to fill up joints or cracks, so as to destroy every lodging-place for filth: every utensil in use should not only be clean, but appear with a polish. The milk should be poured into a receiver outside the dairyhouse, and conveyed by a pipe, or rather an open chute or conduit, to the vessel prepared for its reception in the milk-house, that the milkers may not enter the dairy. Under these circumstances milk may be kept sweet in ordinary weather, in a temperature of 63 to 65 degrees, during the night in one vessel (say the cheese tub), to which the morning's milk may with safety be added, and a fine cheese be the result. I cannot understand why persons prefer the labour of making cheese twice a day, when a cheese of a superior description can be produced by making once, as I have described. In preparing the milk for the reception of the rennet, in the absence of Cockay's or any heating apparatus, care should be taken to prevent the overheating any portion of it, lest its condition become affected before the rennet is added. It is not safe to heat it beyond 100 degrees. During the summer months it frequently happens that no heating is required, the evening milk in the cheese-tub having stood at 65 to 70 degrees; and that of the morning coming in to mix with it at a temperature of 90 degrees, will at once fix the bulk at 78 to 80 degrees, the temperature required. The rennet, which should be perfectly sweet and its strength practically known, should at once be introduced and stirred into the milk so as to take immediate

and universal effect, and at once arrest the particles of cream, and prevent their escape to the surface. If the atmosphere be close and damp and the temperature high, the evening milk may have acquired sufficient acidity to slightly affect litmus paper, to which there is not always much objection; but if it has remained perfectly sweet, a little sour whey of a clean acid taste may be added to assist the rennet, the quantity being regulated by the experience of the dairywoman. The coagulation should occupy 50 to 60 minutes; it may then be cut across at right angles with a long knife or other cutting instrument, when the whey should immediately begin to appear. With the milk at this stage of the proceedings, in the condition I have described, the character of the future cheese is entirely subject to the skill of the operator. To follow the Cheddar method, after remaining a short time in this state it should be broken or cracked up carefully, to prevent waste, when a little whey is taken off and warmed. When the breaking is completed, this heated whey is poured over it, which tends to harden the curd and clear the whey, when the curd will be found to be in small and distinct particles; it is then allowed to subside. A portion of the whey is then drawn off and heated for scalding, which may occupy 30 or 40 minutes. The curd is then stirred up, and the heated whey poured amongst it until it has reached a temperature of 100 degrees. The stirring is continued till the particles of curd again separate and sink, when the whey remains clear. With Cockey's heating apparatus, the breaking and the scalding are performed by one operation, the temperature being gradually increased during the stirring till it reaches 100 degrees. There is probably less necessity for the curd being so finely broken when it is not to be scalded, as there would be some difficulty in again collecting it without the application of heat of a high temperature. After being subjected to the heated whey for 25 or 30 minutes the whole of the whey is drawn off; the curd becomes a compact mass, which is heaped up on the convex bottom of the tub; the temperature being carefully retained, the whey readily escapes. When this is effected, which may occupy from one to two hours, according to circumstances, it is placed in the press to remain 20 or 30 minutes, when it is removed and broken in the mill, and salted with the best refined salt (which is prepared for the purpose by Titley of Bath) at the rate of 1lb. of salt to 56lbs. of curd, when it is again placed in the press. The next morning it is turned in the vat, and a dry cloth is given to it, which is not subsequently wetted. At the end of the third day it is removed to the cheese-room and bandaged, when it is turned every day for a few days; as it hardens it is turned twice a week, and ultimately once, till it is sent to market at two to four months old. The cheeses which were exhibited at the late Chester show by Mr. Gibbons were made by this process, and were good specimens of our best Cheddar cheese. But there is a vast quantity of cheese made in Somerset of an inferior description, and in some of its richest parts, which only requires attention and application to make it worth £10 per ton more money. In Gloucestershire they make their cheese twice a day; it is broken or rather mashed, the whey is dipped off, the curd hardens, and pressure is applied in the tub, but scarcely that amount of "live animal" which Mr. McAdam so graphically describes as having seen in the making of Derbyshire cheese. Here only the hands are employed, and the whey escapes between the fingers; the work of making is finished by ten o'clock in the morning, and the cheeses in the press, weighing about eight to the cwt. I have seen 40 or 50 of them to be turned in the press every morning, when they get a coating of salt and a clean cloth. This cheese, though beautifully sweet in flavour, is not in its general character fine. Wiltshire cheese is made in a similar way, but the shape is thicker; the price of the two is about the same; in texture it resembles the Cheshire rather than the Cheddar. Mr. Keevil's apparatus is a useful invention for their method of cheese-making, but cannot be applied to that of the Cheddar. I cannot but differ in opinion with Mr. Keevil as to the principle he employs in breaking the cheese. It has a revolving breaker, such as was previously used by us; but instead of the round rod, Mr. Keevil has flattened them into knife-shape, so as to cut instead of breaking their way through the mass. My objection to this is, the cheese is more liable to be cut up or mashed prematurely, especially by an inexperienced hand. The rod-breaker is more in accordance with my notions, by acting in the mass similar to the wedge in a block of wood, producing

an angular crack before it, thus more naturally liberating the whey. It is a matter of surprise that so many cheese-makers understand so little of the business from which they obtain their income. Go into the majority of cheese-rooms, especially where thick cheese is made, and this fact is apparent. You there see cheese of various shapes and colours, representing good, bad, and indifferent, the production of one and the same maker, who is not only ignorant of the irregular character of the cheese, but also of a remedy to improve it. Ask the dairy-woman why her cheeses so differ in shape and appearance; what answer will you get? "Cheese never was made alike on this farm," or "the cheese is never good when the cows are in such a field." When the factor comes to buy, and casts his practiced eyes over the cheese to classify them, that he may know how much to offer, his offer is rejected, on the ground as being unfair and partial. He has given a "neighbour a much higher price for his cheese than is not any better than mine," or that he "has a name." These are only specimens of facts that are constantly occurring in the experience of every respectable cheese-dealer. Whilst such ignorance prevails there will be no improvement. On the other hand the responsibility of making cheese is too great to rest alone upon the woman. The man should assist her, by studying the nature of the milk, and the successive changes which it undergoes before the cheese is made, so as to be enabled in his cheese-room to point to any inferior cheese, and understand the cause. If I were to discover a failure in the crop in a part of one of his arable fields, he would at once give me a satisfactory explanation, and he who would be so conversant with cause and effect in the field in the cheese-room would be a complete ignoramus. I greatly pity the poor woman who, having all the cheese-making responsibility upon her, labours might and main, day after day and year after year, to obtain success, and instead of her husband's aid gets his frowns, until "hope deferred has made the heart sick." To such persons I may render some assistance by showing how bad cheese is made. Bad cheese is sometimes made by being sour, of which there are two causes; one from the atmosphere, over which we have no control. The moment milk is drawn from the cow it commences its progress towards decomposition, and if placed in a temperature of over 65 degrees, in a close atmosphere, there is no certainty of its keeping sweet during twelve hours, and should it require to be heated at all in the morning, it will increase the acidity, the presence of which in the milk does not always develop itself until too late to apply a remedy. Another kind of sour cheese, and which is the worst, is caused by a want of cleanliness, either in the utensils or the floor of the dairy, or it may be from effluvia arising from adjacent gutters, or heaps of manure, &c., or meat hung in the neighbourhood of the milk: any of these causes will not only sour the milk, but also impart to it a bad flavour. I have occasionally detected the cause of this kind of sour cheese by the resemblance of its flavour to some adjacent stench. The former of these kinds of sour cheese, made by the Cheddar method, will sometimes become blue mouldy, and when ripe and mellow is exceedingly good. I remember passing through Ledbury once, and seeing a dark, cloudy-looking cheese in the window, I asked the shopman the cause of it being so; and he told me that it was made in the county of Hereford, and could never be made upon their land without putting blue vitriol upon it (laughter). A sour cheese may be clearly distinguished during the process of making to which class it belongs. The curd from naturally sour milk will more tenaciously retain the whey, and will spread itself over the bottom of the cheese-tub, whilst that which is made from tainted milk will part from the whey more readily, leaving the curd in a dry and sandy condition. The intelligent dairywoman will readily understand this, and everything around her will receive an extra scour, which will prove to be a preventive of a similar disaster the next morning. The class of inferior cheese to which I should like to call your attention is such as usually fills our fairs and markets—cheese not made from sour milk (some of which occasionally may be found in our finest dairies), but from milk sweet and good, and but for the mismanagement of the maker would have been of a very different character. These cheeses are of so many grades that they cannot well be classified. I therefore include all full milk cheese which does not reach the standard of fine, and deem them to be inferior. The essential elements of good cheese are fine and mellow texture, sweet aromatic flavour, and rich buttery quality;

the absence of either of these essentials detracts in a greater or less degree from its perfection. Of bad texture are *soft and sappy, porous, and hard dry* cheese. Cheese of bad texture may generally be detected by an experienced eye, as being unshapely, bulged out at the side, upon which the bandages have left indentations, frequently sunken on the top and still soft to the touch, throwing out a thick damp coat: it is larger in bulk than it ought to be, and is more or less out of flavour. There are two causes, one of which, or both, have contributed to the production of such a cheese, viz., weak rennet, or an insufficient quantity, or subsequent neglect. The power of the rennet must be according to the temperature of the milk. Thus milk at 80 will require more coagulatory power in a given time than milk at 90, and if rennet too weak be employed the cheese will be cold, tender, and soft, and will baffle the most skillful hand to make it into a first-class cheese. The cream will rise to the surface, and much of it will pass off in the whey, injuring the quality as well as the texture, and will sooner or later acquire a rank flavour and tallowy complexion. To account for the faults of such a cheese, the annatto frequently becomes a scape-goat. When the whey is not properly extracted, the best annatto (which I am bound to acknowledge is Nichols's) will lose its brilliancy when it comes in contact with whey in a state of ferment. Bad texture is caused also by neglect in the subsequent process, in not giving the required attention to the curd in its various changes, allowing it to lose its temperature and checking the free escape of the whey. Both regularity and attention are indispensable to the production of good cheese. The mother or the housewife who gives more attention to her children or household matters than she does to her cheese, will not be a likely person to succeed in producing a uniformly fine dairy of cheese. The cause of a soft, sappy cheese is undoubtedly due to the presence of whey, either from an imperfect separation from the other constituents of the milk at the commencement, or from subsequent neglect or ignorance. Porous cheese from the Cheddar and Cheshire methods of making are quite distinct in their character. The former, if made porous, will never acquire that closeness which characterizes its superiority of texture; but the latter, though porous for the first two or three months, will ultimately become solid and good. One of the finest cheeses I have tasted was a Cheshire cheese two years old, which was as close and fine in texture (aplausé)—ah, but I have something on the other side: it was equal to the finest Cheddar (laughter). As a rule, a porous Cheddar cheese will be inferior in flavour, fermentation in a greater or lesser degree being the immediate cause—a cause which must be again placed to the credit of the presence of whey. Another cause of porous cheese, is by using too much rennet or overheating the milk. The coagulum becomes so hard that it is almost impossible to break it as fine as it should be; besides a loss of cream, a bad texture is the result. The inexperienced dairymaid will stir too fast, without judgment, till the curd becomes brittle. A cheese with a hard dry texture will seldom improve; the factor often mistakes it for a skimmed milk cheese. The bad flavour in the cheese, in my opinion, is more easily accounted for than persons in general believe. We must return to Nature and consult her laws. The chymists tell us that, in the decomposition of milk, milk sugar is turned into lactic acid, which soon becomes a butyric acid, having a taste of rancid butter. Now if we carefully analyze the smell that generally prevails in ill-flavoured cheese, I think you will agree with me that it is very nearly related to that usually found in strong butter. If this hypothesis be correct, then we have a clue to the cause of much of our bad-flavoured cheese. It points also, at least, to a suggestive remedy, viz., that as soon as the coagulation is properly formed and broken, there should be no delay in drawing off the whey. There is another kind of flavour which we frequently meet with in cheese, which is much worse than that I have described, and requires no uncommon olfactory powers to detect its origin. It is so distinctly foreign to milk—it has evidently been imported by some one of the causes I have named under the head of sour cheese. It is a striking fact that this class of ill-flavoured cheese is rarely found where there is good dairy accommodation, although it is not an uncommon occurrence that we find a cheese somewhat out of flavour in our best and finest dairies, but not from tainted milk. Stinking rennet does not always impart its flavour to the cheese. I knew a dairy that was made by rennet, that when disturbed, scented the room; yet, when the cheese became ripe, there

was not the slightest trace of any unpleasant smell, and which I had expected to find, and the cheese was as good as it usually was, a good second-class cheese. I do not give you this as an example to copy, but to show you that the bad flavour in cheese is not always caused by tainted rennet or by accident. I am free to admit that certain kinds of food will affect the flavour of cheese, such as green tares if given in the summer *ad libitum*, a practice which should be followed with caution. I have never learnt that a difference exists in common pasturage of different localities to materially affect the flavour of cheese. Some persons spoil the flavour of their cheese in their vain attempts to improve nature—as, for instance, making rennet with sweet-briar, the flavour of which they think is imparted to the cheese; but that is not the fact. Nature needs little improvement, only assistance. Neither the milk nor the rennet needs to be artificially flavoured. The quality is of course due to the presence of cream in the first instance—that is, we cannot make a cheese of good quality without the cream; but not a little depends on the skill of the operator in carefully manipulating the first stages of the process, so as to secure and amalgamate the caseine and butter. But something depends on the quality of the land. It is true that some land is richer in butter than others, while some is richer in cheese. I could give instances of this, but perhaps you can supply them from your own neighbourhood where 1 or even 1 lb. of butter per cow may be made per week, and still the cheese be as rich as on some land where all the cream is retained. In general the clay and oolite, where there is a depth of soil, are the most productive of cheese; whilst the limestone drifts and lias produce the largest quantities of butter. But to make a cheese of good quality does not entirely depend upon the presence of large quantities of butter. In the "Journal of the Royal Agricultural Society" of 1861, part 1, Dr. Voelcker gives the analysis of several cheeses which showed varying quantities of butter. Of three of those specimens, that which showed the smallest amount of butter was the richest cheese, and worth a penny per pound more than either of the others. This result was due to the superior manufacture. A cheese carelessly broken, either too fast or too slow, will tend to produce a cheese of inferior quality—in the one the butter will be lost in the whey; in the other, it will be bound up and hidden in the curd (I am speaking now of scalded curd), both producing similar effects. There is just one other kind of cheese which I should like to name, if I had a name for it. I have occasionally seen it in the Dunlop method, and should not be surprised to find it in cheese of the midland counties. It is a cheese hard and crumbling in texture, destitute of quality or flavour, without life or spirit, as if the vitality of the milk had been entirely destroyed—a nondescript kind of thing. How it is made I confess I cannot tell you; and if you adhere to the principles I have here laid down, you will not succeed in making them. In my foregoing remarks I have chiefly held the Cheddar method of cheesemaking in view, not because I may be more conversant with that than any other, but because of its peculiar adaptation to the requirements of the natural laws and principles of cheesemaking. But only in two or three instances have I advanced anything but what should be regarded in the making of cheese under any method; and you cannot fail to have been struck with its simplicity. Here is nothing wonderful, nothing mysterious, but simply following the dictates of nature. I have said little of the dairy-room, or the storing of the cheese, partly for want of time. Perhaps a brief description of my own dairy-room and furniture, &c., will suffice for the present. My dairy is by no means a good one—inadequate to the requirements of the milk of seventy cows, and not at all favourable to the making of fine cheese; but, in the absence of better, I make the best of it. It is 18 ft. long, 12 ft. wide, and 7 ft. high. It would astonish some cheesemakers to see how few utensils, and what a small amount of labour, are employed in the production of good Cheddar cheese. The tub is placed nearly in one corner of the room, to which is connected Cockey's heating apparatus. The milk is poured into it from without. The evening milk remains in the tub during the night, to which that of the morning is added. During the summer nights a stream of cold water is admitted, and, after filling the cavity beneath the tub, continues to run off, cooling the milk in its passage through. The whey escapes from the tub, by means of pipes, to the piggery. The press, which is a treble one, presses all the cheese. There are no leads to wash,

no dipping of milk or whey, and no slope on the floor. The cheese-tub is of copper, and all other utensils of tin. One of my daughters, or their mother, makes the cheese, and a man handles them after they are made. I hope I have been successful in showing the ladies, especially the younger portion of this audience, that cheesemaking is not unworthy their attention: there is nothing in it low or menial; but it is a respectable and intellectual employment, which requires no ordinary amount of mental capacity to ensure success. To any young ladies who would wish to acquire a fortune independent of her father, I would say, study to make the best cheese by the smallest amount of labour. A thorough understanding of the fundamental principles and the subsequent progressive changes of the curd is indispensable—a knowledge not easily acquired without practical teaching. A good and spacious dairy room, supplied with every convenience, presided over by the intellectual wife or daughter, who is the dairymaid, the housewife, and the lady, is a manufactory which the dairy farmer may well be proud of. I might have embellished this lecture with sparks of borrowed eloquence and scientific phraseology, which might have met with commendation from men of theory; but as a practical man to practical men, I have studied to treat the subject in the most simple yet practical manner which its importance demands. I have therefore given you the result of thirty years' study and experience, and hope it may be at least useful. The lecturer on resuming his seat was loudly applauded.

The CHAIRMAN, having borne his testimony to the highly practical lecture they had heard, said it could be indelibly impressed upon the memory of all cheese-makers throughout the country. The subject was one which had engaged his attention for some years, and though he had not been able to secure the highest price for the cheese he sold in the county, still he was a learner, and if life were spared to him he did not despair of one day reaching the summit of perfection (laughter), so far as it could be reached in the present imperfect state. Undoubtedly, as science and practical experience were brought to bear on cheese-making, the more good cheese would be produced. That a great deal of cheese now made in Cheshire was of an inferior quality and might be greatly improved was admitted by all competent authorities; but whether much improvement would ever be effected upon the best description of cheese made in this and other counties was to him at present a very questionable matter. He was not biased in favour of any particular mode of cheese-making, and would willingly adopt that which produced an article of the greatest worth and suited to the different markets, for variety in the mode of making was a wise arrangement, and subservient to man's temporal interests. The cheese of a loose open texture, so highly prized in the north of England, was not so well adapted for the western markets, where a firm cheese was appreciated the most, and vice versa. Cheese of a very superior quality, as they had heard, was manufactured upon the Cheddar principle; and no doubt if some Cheshire farmers were to make fine Cheddar cheese it would meet with a ready sale in the London market; but he considered it would be unwise for all farmers in the county to adopt this plan, so long as the cheese-consumers in large manufacturing towns in Yorkshire and Lancashire preferred a fat flaky cheese to the really fine-flavoured which lacked these qualities. The means for effecting improvements in cheese-making were at present open to examination. Some persons had been advocating public factories as the desideratum of the day; but although a few farmers might prefer sending their milk to the factory, nearly all he had conversed with were inclined to convert it into cheese upon their own premises. He had thought lately that dairy-colleges, or college-factories, would be a great benefit to the country; these to consist of suitable premises to take the milk of one or two hundred head of cattle, or more, with some competent person to take the superintendence and train up young people in the art of good cheese-making, combining science with practice. As the dairy question was one largely affecting the interests of the landlords, they ought to give their distinguished patronage and support, in order to render such colleges efficient and successful. As "kissing goes by favour" (laughter), so good dairymaids were to be found in certain families. A mother well skilled in cheese-making having seven daughters, generally trained them up to follow in her footsteps (Hear, hear); but if she was so unfortunate as to make inferior cheese, the bad system was too often transmitted from one generation to another for an indefinite period of time. Persons making inferior dai-

ries were often harassed and perplexed to find out the true cause of it, and would go on groping through life without disclosing their feeling and seeking the advice of others. Dairy colleges would to some extent remedy this evil, and bring about a better state of things. Right ideas and principles implanted in the mind in early life, in regard to cheese-making, were generally retained till old age; and those who set out with a wrong system, adhered to it as a rule through life; and if any measures could be devised to effect a reformation in cheese-making throughout the country, it would be conferring a great benefit upon both the present population and generations yet to come. Of the cheeses, he remarked that they had one real Cheddar from the dairy of Mr. Gibbons, of Tuley, near Bath, who took the champion prize at Manchester, last September, and also the first prize in the Chester show-yard last week. They had also a Cheshire Cheddar, and about half-a-dozen Cheshire from the dairies of Messrs. Fickett, Siddorn, Rushton, Dutton, Sheen, Willis, and Aston. There were also two Americans, which had been selected by Mr. Jackson, of Tattenhall, at Liverpool, and were branded. All would be cut for examination.

Mr. DUTTON, sen., said they had heard a good deal about factories. What would be the expense of them?

The CHAIRMAN replied that it was a question he could not answer.

The LECTURER said he would add, having had communications with American gentlemen of the highest authority, that Mr. Willard, the agricultural editor of the *Union Herald*, stated the expenses of cheese-making there was 1d. per lb., and therefore it could be made at less expense in our own dairies.

Mr. MCADAM rose and expressed the opinion that wherever bad cheese was made it was the fault of the manufacturer and not of the land; and that all might make good cheese by bringing skill and judgment to either the Cheddar or Cheshire systems.

Mr. ROGGE BATZ did not get up as a practical cheese-maker, but to open the discussion by letting out some of the secrets of factory cheese-making (laughter). As a proof that the finest cheese-makers were to be found in a few families, he went some years ago to a large farm, not many miles from there, and found that the dairy was one difficult to deal with, he being afraid to buy; but now the same farm was occupied by another tenant, and the dairy was one of the finest in the county. The maker of that dairy had three married sisters in different parts of the country, and all four of them made fine cheese. As to the system, he believed that either the Cheddar or Cheshire was capable of producing fine cheese. He questioned if there was much difference in the relative proportions of fine cheese from Cheshire and Somerset, and he would say to those making on the Cheshire principle, Don't change. Of late, however, there had been great complaints that Cheshire had fallen off in quality, and this was attributed to the loss of cattle during the plague. The milk having to be kept for three milkings before the manufacture of the cheese, it was dry and crimpily, the result of too much acidity; but as the stock was again being restored the cheese was improving. There was another reason for these detractors, that when the market was overstocked the dealers became sassy, and cheese—admitted to approach fineness in quality when scarce—would be found fault with if plentiful. He was far from thinking that the quality of cheese had not improved during the last ten or fifteen years; he believed the bulk had improved, and that there was more fine cheese made now than when he first became a factor, but still the bulk was such that it was crimpily, devoid of flavour, and he would scarcely make an offer for it. Then there was another description of cheese, tough in texture, and if they had seen it he advised them not to make it.

Mr. H. SIDDORN attributed the toughness of this cheese to too great a heat being applied when in the iron, the absence of sufficient care in separating the whey, and perhaps too much salt. The loose crimpily cheese would be owing perhaps to a want of care in keeping the milk sweet, and keeping up the heat after it was manufactured. He deprecated the absence of so many ladies from the dairies, who preferred rug-making, netting, tatting, and such pursuits, to cheese-making, and thought that this state of things might be altered if they could rise to the high standard the lecturer had given, and represent the process as one involving skill and intelligence. Nor did he despise these modern accomplishments, but it was better

there should be a total lack of them than of those practical qualifications which tended to make the farmer happy, when he was assisted in paying his rent and meeting his expenses. There were some things in the lecture at variance with their practice. They believed they were able to make something approaching a good cheese, although they might have very close to their milk-houses "middens," and kept their floors damp. When it was very hot his wife ordered the servant-girl to throw cold water under the milk-pans, which was against the lecturer's theory, although he fully agreed as to the care that should be taken in the breaking up of the curd. As the chairman had said, he liked to see it broke as if they were breaking eggs.

Mr. SLATER, after expressing the hope that we should not be overmatched in cheese-making by the Yankees, said he did not know that there was much bad cheese, but there was a great deal of an inferior quality. The difference between 60s. and 75s. or 80s. per cwt. was worth consideration, and especially in Cheshire, where the make of cheese was large. He differed with the last speaker, and, though he thought with the lecturer, that a dry milkhouse was the best, unless it were possible to have a stream always running to prevent smells, a milkhouse swilled with water was liable to accumulations of dirt and sour milk in the crevices of the floor, which had a tendency to sour the milk for cheese-making. He had witnessed this in his own experience, and on having the floor of his milkhouse removed and pitched with blue flagging, about six inches below the ground, he found it decidedly the best to keep it dry, and to have every drop of wet wiped up. Since then he had never had sour milk. Alluding to the many different sorts of cheese made in the same dairy, he recommended that experiments should be made, and that each lot of cheese made should be registered with the date and mode of making, and then they would be thus able to ascertain the best method. He also agreed that cheese-making was a good qualification for the wife of a farmer, but that it was better to take a wife who did not know how to make cheese than to take one who made it badly, and who was prejudiced against any other process, and could not readily unlearn old habits. The cheese made now was better than it was twenty or thirty years ago, and though he did not know whether there was much more fine cheese made, there was not so much that was

very bad. For the last year or two they had had to keep three or four milkings, but now they were improving, and hoped again to be able to make two cheeses a day with a stock of three score cows.

Mr. HARDING, referring to what Mr. Siddon had said, hoped it would not go forth that Cheshire farmers generally had their manure-heaps so close to their milkhouses. He could not see that a damp milkhouse was anything but pernicious. If the milk was spread here, following the principle that the coldest blast was lowest, it was good; but why spread the milk? There was no necessity for it. He could not understand, too, why they had those holes in the vats (laughter), and why the cheeses were placed upon straw? Nor could he understand the anointing of the cheese, which was what might be called "extreme unction." But still he would say, follow your own practice, and don't try to mend. You have done well, and produced some first-class cheese.

Mr. DUTTON, sen., explained that the placing of the cheese upon a bed was to prevent it from being chafed or indented, which was considered to spoil the appearance of it. Being very jocular he recommended the ladies to try and make good cheese, and said that those who were single would get a husband sooner by many years. As an incident in his own experience, he said first of all he had a dairy-maid to make the cheese, and sold it in a twelvemonth for 62s. per cwt., but after that he and his wife turned their attention to it. If they had factories, their wives and daughters would be always wanting gigs and four-wheel carriages to take them about. And there was another thing: the landlord would be able to tell, if the milk was sent to the factory, how much was sold—to a pint (laughter and cheers).

The CHAIRMAN, replying to another query, said that the holes in the vats he supposed were to expedite the clearing of the cheese. He admitted that the cheese would do without skewering, but it took one or two days longer.

Mr. FINCHETT, on being called upon, said he left the cheese-making to his wife, and so long as she did it to his satisfaction he should not interfere.

Mr. Rigby proposed a vote of thanks to the lecturer, and Mr. Siddon seconded this; and Mr. Finchett proposed and Mr. Dutton seconded a vote of thanks to the chairman. Several then inspected the samples of cheese which were cut.

THE FACTORY SYSTEM OF CHEESE-MAKING.

TO THE EDITOR.

SIR,—In the *Mark Lane Express* of Monday, March 16, there appears a letter from Mr. Jackson, in which he states "that all the bad American cheese which has come to this country for the last twenty years has been made on the Cheddar slip-scalding plan."

This is a mistake; and Dr. Voelcker was quite correct when he attributed the improvement which has recently taken place in the American cheese to the adoption in that country of the Cheddar method, as far as the factories are concerned. Until within the last eight or ten years the Cheddar method proper of cheese-making was unknown there except in a few localities, where it may possibly have been introduced by emigrants from this country. The introduction of the Cheddar system is undoubtedly due to the different writings on the subject which have found their way across the Atlantic and sharpened the 'cuteness of the American cheese-maker, who is always eager to gain knowledge; the result of which is, that several very intelligent men have come over to us to acquire the method practically, and others equally capable have gone from us to them. Mr. M'Adam, of Gorsty Hill, Crewe, has four sons, each of them superintendent of an American factory conducted on the Cheddar plan; as also others whom I could name.

I agree with Mr. Jackson that the associated milk of

1,000 cows, if made by one uniform method of manufacture, would (or ought) to produce cheese of uniform character, subject to the general contingencies of cheese-making, which would be very different in its results than if made in fifty home dairies. But what of that? Whom will it benefit? Not the consumer, unless it gives an increase of food, which is not the case; it has never been shown that more food has been supplied by associated than by individual practice. The mere fact of an improved quality and flavour in cheese does not commend itself as a universal benefit; although the majority of our English cheese is inferior, yet there is no difficulty in finding a consumer for every grade. The landowner is not benefited; if he wishes the improvement of his land, he will not allow his tenant to sell his milk, thereby cutting off the natural supply of manure, as not even a pig would be found on the premises. And certainly the tenant is not benefited. In the first place, he can make it cheaper in his own dairy; the price charged in the American factories, after the delivery of the milk, is 2 cents per lb., or, in round numbers, 10s. per cwt.; nor can we expect that the expense would be less here. When the dairy farmer is in a position to, or from necessity pays for every kind of labour connected with the dairy, the whole of the cost will amount to about 7s. per cwt. When the cheese is made by the family, the expenses will be very much less. Nor can the factory system be any advantage

to the sons and daughters, who would be deprived of an employment which is strictly their own—an employment which is at once remunerative and elevating in its study. There is seldom any employment which offers itself to the daughters of dairy farmers which is superior in its character to that of cheese-making; in the absence of which they must, in all probability, find their places behind the counter, or in the position of governesses at £14 or £15 a year. In both cases they would have to exchange a mother's influence, home comforts, and the position of superintendents of an intellectual and respectable employment, in which no small amount of self-interest is involved, for that (to say the least of it) of a servant. Where, then, is the propriety of the introduction of the factory system, or the advantages to be derived from it? If a benefit arises from it to any class it may be to the cheese-factors, who frequently are mortified and have to suffer loss from having to buy inferior cheese; but they may be supposed to have the remedy in their own hands. Why cheese-making should be called drudgery, or those engaged in it slaves, I am at a loss to know. Why

should not the same epithets be applied to our ploughing and ploughmen, and other farm-work and labourers? The work of the dairy-servant is no more a drudgery than that of the housemaid; in a well-regulated and organised dairy there is a place in which the work is performed, as in the shop of the shopkeeper; in neither case need home comforts be interfered with. The dairy farmer pays a high rent, and cannot afford to place his materials in the hands of another and to pay him a money-value amounting to a sixth-part of his produce for manufacture. Let the dairy wives and daughters of our country rose themselves, spurn the proffered factory assistance, and endeavour to arrive at the standard of perfection in their own dairies, doing their own work and reaping their own reward, and the inferior cheese will soon be brought down to a minimum. I learn from Mr. Willard, and others who have visited me from America, that their finest cheese is still to be found in private dairies; so let it be in Old England.

I am, &c.,

JOSEPH HARDING.

Marksbury, Bristol.

THE POTATO IN FRANCE.

A prospectus has been issued in France for the organization of two "new Special Agricultural Societies"—the one to be called "La Parmentière;" the other, "La Cérés." It is with the first that, at present, we have to do; and it is described, in the prospectus, as "a national society for the study of the potato-disease; the search for the best means of preservation; the best process of cultivation; and for the propagation, in each commune of France, particularly with the concurrence of the promoters, of the most productive kinds or varieties—of those of which the tubers, if not the stalks and leaves, have escaped the disease—of those adapted to each variety of soil; and also of those which are more particularly proper for the alimentation of man, or that of the inferior animals."

Such is the field of inquiry which the projectors of the Society propose to enter upon; but before we refer to this, the name given requires some explanation. It is matter of history now that, until the year 1780, the potato was not generally cultivated in France. Several attempts had been made to introduce it into that kingdom from the year 1588; but so violent was the clamour raised from a ridiculous notion that the potato conduced to leprosy, that every effort failed; and it was not until the year first named that, through the persevering efforts of an intelligent man of the name of Parmentier, in face of a perfect storm of persecution, this root was at last received in France as an article of human food. Parmentière began his experiments in 1773, and made plantations on an extended scale on the plains of the Sablon and Grenoble. So determined was the opposition, that he was compelled to obtain a guard of soldiers during the day; but these being withdrawn at night, the neighbouring peasantry wilfully rooted up the plants, in the first instance; and afterwards, finding out their error, stole the tubers for seed for their own lands. So rapidly did its cultivation spread from the year 1780, that in the season of 1785-6, when a failure of the cereal crops occurred, the potato, so far as it was cultivated, saved the lives of hundreds who would otherwise have perished by famine. On several other occasions—as 1795, 1806, and 1807, when similar seasons of scarcity occurred—"it saved France," says the author of "La Dictionnaire," "from the horrors of famine." So greatly

has "it gained ground since, that in 1835 the breadth of land under its culture rose to 2,400,000 acres, and it has continued to increase. Whatever name it bore in other countries, in France it was long known by no other name than 'La Parmentière,' though of late years it has borne that of 'Pomme de terre; or, Apple of the earth.'" It is therefore with strict propriety that the new society should be called by the name of the introducer.

With respect to the first-stated object of the Society, namely, an investigation into the nature and cause of the potato-disease, we do not look for any new or definite result. The case has been investigated repeatedly by some of the first scientific men of the age, both on the Continent and in the United Kingdom, but without their being able to come to any unanimous conclusion. Still the question is an open and an important one, and it is possible that further light may be thrown upon it by a careful attention to the phenomena, whether atmospheric or otherwise, by which it is attended. Whatever these may be, like the causes of epidemic disease in the human species, they lie above or below the mere surface of the ordinary atmospheric phenomena; for the character of the season does not appear to have any influence. For instance: in 1845, when the disease first appeared, the weather was cold and wet, while that of 1857 was the most warm and brilliant we had had for many years; yet the disease, after lying dormant for some time, broke out that season with great violence. Notwithstanding this discrepant circumstance, the information that the Society may be able to collect cannot fail to be of importance, embracing, as it probably will do, information and experience from all parts of France, and, probably, of Europe.

The prospectus is accompanied with a code of instructions to those who may be disposed to promote the objects of the society, or who become members. These instructions embrace many particulars which, under any circumstances, will be of use to those who cultivate the potato. The Society will also publish a weekly paper, containing all the information they are able to collect.

It is a question not yet decided whether any particular species of the potato is less or more liable to the disease than another. This inquiry is further embraced amongst the propositions of the Society. In our

annual returns of the crops, we frequently find particular species of the potato said to be free from the disease while others on the same kind of soil and under similar treatment were attacked. But, at present, there are no *general* facts of this kind to warrant a preference to certain types of the plant; nor are we enabled to judge, from the isolated instances that have reached us, of the immunity of any species of the potato sufficiently marked to justify its exclusive adoption. The same may be said of the mode of cultivation. Generally speaking, the potato-growers in the neighbourhood of

the metropolis are perhaps the most intelligent cultivators of the root in the world; but all their experiments and efforts have not enabled them to fare better than their fellows—excepting that, as they farm higher than the general farmer does, in a partial attack of the disease they save a larger proportion of the tubers by immediately sending the sound roots to the market, without attempting to store them up. The prospectus informs us that the Emperor Napoleon gives up two fields of the imperial farm at Vincennes whereon to institute a series of experiments relating to the objects of the new Societies.

PRESENTATION TO CANON GIRDLESTONE.

A silver epergne, which the labourers of Halberton and the neighbourhood subscribed for, in appreciation of the efforts which Canon Girdlestone had made for the improvement of their social position, has been presented to the reverend gentleman at a dinner. The epergne, valued at forty guineas, is modelled in the shape of a stately oak, around the stem of which are grouped three labourers; one using the spade, another the seed-box, and a third the reaping-hook. Sir John Bowring took the chair, and made the presentation.

In responding, the Canon said: This will tell the tale that I have, I trust, by God's blessing, been enabled to do my duty to the labourers. But, Sir, I beg leave to be understood, in saying this, that I have not on that account neglected my duty to the farmers. I know I have been much misrepresented to that effect; but I take God to witness that I feel that in doing my duty to the labourers I have been at the same time as faithfully doing my duty to the farmers. It has been said that in endeavouring to raise the wages and the condition of the agricultural labourer I have inflicted injury upon the farmer. I simply, but flatly, deny it. If any farmer in this county or in this country is bold enough to get up and to tell me that a horse that is badly fed and badly stabled and badly groomed will do his work half so well as a horse that is well fed and well stabled and well groomed, then, Sir, but never till then, will I believe that I am inflicting an injury upon the farmer by endeavouring to raise the condition—physical, moral, and intellectual—of the labourers of this parish. I am happy to say that a majority, two-thirds I may say, of the farmers of this parish at the present time take the same views as I do on this matter. And I am likewise able to say that, from a very large correspondence which I have had during the last twelve months with farmers in every part of England, including the northern and southern divisions of this county of Devon, I find I have a large number of farmers in every part of the country thinking on this subject identically the same as myself. I protest against its being said that either the farmers of England or the farmers of Halberton are opposed to me on this matter. I am opposed by a clique. Up to this period the agricultural labourer has been in the most oppressed condition, and it is high time that even his fellow-labourers in other walks of life, the mechanical, the manufacturing, and the commercial classes, should join with him, as I hope they will, in endeavouring to produce his elevation. But, after all, we outside can do positively nothing unless you help yourselves. There is no help, depend upon it, like self-help. Just as Longfellow makes Captain

Miles Standish say, "If you wish to have a thing well done, you must do it yourself." Well now, I say to you agricultural labourers, you must put your own shoulders to the wheel, you must assert your own independence, you must arouse yourselves, you must be plucky. I use a good old English word: all of you must be plucky; that is what you must be. And I have no hesitation in saying to the agricultural labourers that they must form a union among themselves. The mechanics have their unions: every trade has its union. Even the tailors, and a tailor is said to be only the ninth part of a man, even tailors have their unions. And I say the agricultural labourers must have their unions. I am afraid that nothing short of this will ever overcome the great amount of resistance which is opposed to raising the wages of the labourer to even a miserable minimum, and to make him, I won't say an independent man, but, to use a common phrase, even to make a man of him.

The *Western Times*, in commenting on this demonstration, says: "Canon Girdlestone may possibly fancy that he has been raising the wage of every working man in his own parish—except that of his hard-working curate—but if he do fancy anything of the kind, he is only giving way to mere conceit. He has told the labourers nothing about wages that their own sagacity did not acquaint them with before; but as he contrived to quarrel with the farmers by the way in which he set about his Christian work, he made a noise in the world, which has brought him a good deal of that glory which a Cheap Jack gathers from the *gobe-mouches* of the village green. When Canon Girdlestone began his benevolent preachments about the condition of the labourer, and let fly at the farmers for the state of their cottages, *his own glebe cottages were the very worst connected with the parish*. The farmers got Canon Girdlestone's cottages photographed, as a practical commentary on the text of the preacher, and the Parson had them immediately pulled down; and whether to save his pocket, or to meet the wants of a declining population, where two cottages were committed to his care by the church, one only now stands. This new cottage, however, is habitable, while the old glebe cottages were not. Having preached to the farmers about their indifference as to the condition of their labourers, they attempted, when they met him at his tithe feast, to reply to the reverend divine. But with an arrogance which he could hardly have taken in with the inspiration of holy orders, he bounced out of the room, and refused to hear them in their defence."

THE CONDITION OF THE AGRICULTURAL LABOURER.

A conference on this subject, convened through the medium of a circular, issued by the General and Agricultural Labour Institute, was held on Saturday, March 28, at Willis's Rooms, St. James's. The chair was taken, at one o'clock, by Professor Rogers; and among those present were the Earl of Lichfield, the Earl of Essex, Lord Northbrooke, the Marquis Townshend, the Hon. Auberon Herbert, Sir E. Lechmere, Mr. C. S. Read, M.P., Mr. W. Morrison, M.P., Mr. Pollard-Urquhart, M.P., Mr. Fawcett, M.P., Mr. P. M'Lagan, M.P., Colonel Dyott, M.P., Captain Dashwood, the Rev. Canon Girdlestone, Mr. Beales, Captain F. Maxse, R.N., Colonel Dickson, Professor Beesley, Mr. H. Atherton, Mr. G. J. Holyoake, Mr. George Potter, and a number of other gentlemen, many apparently identified with the League and the trades' unions.

A letter had been received by the Secretary (Mr. A. Reid) from Mr. W. E. Gladstone, M.P., saying that he much regretted that it would not be in his power to attend the meeting, the right hon. gentleman adding, "No subject can better deserve a searching examination."

In the circular above referred to, the following questions were announced for consideration: "1. What are the causes of the unsatisfactory condition of the agricultural labourer? 2. What are the means best calculated to improve that condition? 3. If by the formation of a society, then upon what plan should such society be constituted, and what steps taken to form it?"

The CHAIRMAN, in opening the proceedings, said there could be no doubt that the subject before the meeting was one of great magnitude. Nothing was better known than the fact that the condition of the agricultural labourers throughout the United Kingdom, except in a few localities, was very unsatisfactory. For some years past he had paid great attention to this matter. Comparing the condition of the agricultural labourer now with his condition at the time when Arthur Young wrote on agriculture, nearly a century ago, he found that the comparison was against the present day. It appeared that in Arthur Young's time the wages of labourers in 77 places, lying north-east of London, amounted on the average to 7s. 3d. per week. According to a calculation he (the Chairman) had made, the value of money in those places in relation to the cost of rent and living was also in favour of the former period. He took the average price of meal at that period at 48s. per qr., the average price of meat at 8d. per lb., of butter at 6d., of cheese at 3d., and he took house rent at an average of £1 8s. 2d. These figures certainly tended, in his opinion, to show that the wages of agricultural labourers had not risen in proportion to the increase in the price of the first necessities of life. He would not dwell on the subject, but call upon a gentleman who had long taken a benevolent interest in it to address the meeting.

CANON GIRDLESTONE, having risen in response to this call, commenced by remarking that his experience among agricultural labourers was of long duration, extending over twenty-five years in Lancashire, three and a-half years in Gloucestershire, and lastly five years in Devonshire, where he now resided; adding, that it was not till he was benefited in the latter county that his attention was seriously directed to the labourer's condition. During the last 12 or 18 months he had, in pursuit of his object of improving that condition, caused the removal of upwards of 100 families from his own neighbourhood to various counties of England, where, instead of 7s., 8s., or 9s. a week, the men had obtained not less than 12s. a week, with a house and garden provided rent free. The labourers who had thus removed were, with few exceptions, still employed in agriculture; and, far from wishing to return to low wages, many of them had tried to persuade relatives and friends to follow them to their new quarters. His experience had led him to the conclusion that agricultural labourers were almost everywhere in a very depressed condition. That condition was no doubt different in different counties, and very often in many parts of the same county; so that in one parish you would find the labourer as regarded wages and house accommodation,

and almost every element of improvement, much better off than the labourers of even an adjoining parish. This difference was natural, inasmuch as in one parish the land was owned by one who paid attention to his property, and in the next by one who was non-resident and seemed to have no care for the people on his estate. In his own neighbourhood, when he first went to reside there, wages were almost everywhere 7s. a week, with no other advantage except a quart of cider a day. Now wages had, in consequence of what he had done, been raised to 9s. a week; but he held that an agricultural labourer ought to have at least 12s., with house rent free, and that without that amount it was impossible for him to support his wife and children, and to lay by something for a rainy-day. If they compared the condition of the agricultural labourer with that of mechanics, colliers, and persons employed in mills and manufactories, they could not help seeing that there was great need for improvement. The question was how an evil which was universally acknowledged was to be remedied. He did not believe a Registration Institute could remedy it; the experience of twelve months in the Institute, which convened weekly, having shown that the requisite organisation would be too expensive. He thought the real remedy consisted in a well-constituted and well-regulated union of agricultural labourers, and he hoped the result of that meeting would be the formation of a society or committee in furtherance of that object. He thought they could not too carefully guard against what had been the great blot and blemish of the trades' unions throughout the country, namely, their aggressive character. Whatever union was formed for agricultural labourers should be of a strictly defensive and protective character. He would not join in any union which was not carefully guarded against the contingency of any portion of a master's property being in the slightest degree damaged, and against the slightest possibility of fellow-workmen being injured or intimidated because they did not choose to belong to the society. What he contended for was free-trade in labour, that the labourer should be enabled to carry his labour, which was his capital, to the best market, and that for that purpose every possible facility should be afforded to him for removing from place to place. He had sometimes been told that he knew nothing of political economy, else he would see that the rate of wages must find its level in different localities. He was quite aware that wages, like water, must find their level; but if water were pent up in a cistern it could not find its level, and in like manner the wages of agricultural labour could not find their level if the labourer were confined to a particular locality. Of course he expected to meet with opposition as well as sympathy in that meeting; and, with a view of bringing the question to some practical issue, he had prepared a series of resolutions, which would at all events form a basis for discussion. Those resolutions were as follows:

1. "It is the opinion of this meeting that in many parts of the country the condition of the agricultural labourer, as regards wages, treatment, house room, and opportunities for acquiring information and manual skill, is such as demands serious and immediate attention."
2. "That, as one means of raising the agricultural labourer from his depressed condition, it is desirable to encourage and assist the formation of Agricultural Labourers' District Mutual Protection Societies."
3. "That these societies should be in principle and operation strictly defensive, and carefully guarded against all possibility of aggression either on employers or fellow-workmen, and that their chief object shall be to secure a fair day's wages for a fair day's work, in proportion to skill, ability, and industry."
4. "That a committee be at once appointed, to be employed in forming the above societies, and to direct and superintend their work, to draw up a code of rules for the use of these societies, and to promote in all possible ways both the physical and moral improvement of the agricultural labourer."
5. "That those interested in the improvement of the condi-

sion of the agricultural labourer be earnestly requested at once to provide a fund for the payment of the salaries of organising agents and all other expenses incurred in carrying out the above objects, and to pay over all donations and annual subscriptions to some place to be specified."

Mr. HOLLAND, of Buckingham, contended that the resolutions just read would not meet the case, inasmuch as labourers would not dare in their present position to belong to a union. The farmer who employed them would, he said, regard that as an attack upon himself, and they would suffer accordingly.

Mr. DUNNING said, having watched the working of trades unions for forty years, he doubted the applicability of the system to the case of the agricultural labourer.

Mr. FAWCETT, M.P., said, viewing the resolutions of Canon Girdlestone as a scheme for raising the wages of agricultural labourers from their present depressed and unsatisfactory condition, he considered them vague, insufficient, and incomplete. He fully appreciated the services which the rev. gentleman had rendered on behalf of that class of persons; but the question was whether what was now proposed tended to make the labourers independent of their assistance—in fact, to enable them to help themselves; and it struck him that their merely acting on the defensive would be perfectly useless. They were not yet sufficiently intelligent and independent to form combinations. The only way in which their wages could be raised at present was through their removal to other districts. But that would not solve the difficulty of the condition of the agricultural labourer; it would simply have an equalising tendency, and, though that might be valuable, something more was wanted. The only real solution of the difficulty was to be found in one word—education. If labourers were educated as well as they ought to be, they would have intelligence, enterprise, and knowledge; and, possessing these, a labourer would not stop in one part of the country starving on 10s. a week, when by removing to another part he could get twice as much. Labourers would then no more consent to do that, than persons would sell shares at Bristol at £50, when by sending them to London they could get £70 or £80. The hon. gentleman concluded by moving a resolution to the effect that up to the age of thirteen children should be compelled to attend school so many hours a week.

Mr. W. MORRISON, M.P., deprecated the time of the meeting being occupied in a discussion on education, especially as that question was certain to be settled in a satisfactory manner by the year 1870, if not earlier. He was not prepared to support the formation of an Agricultural Labourers' Union—first, because there was a Commission sitting on trades unions generally which had yet to report; secondly, because he did not think any such organizations likely to be forwarded by the patronage of the upper or the middle classes; and, thirdly, because he was not at all sure that unionism was the best resource in the struggle between labour and capital in any case, and least of all did he consider it to be so in the case of agricultural labour. The hon. gentleman then proceeded to advocate the application of the principles of co-operation as a remedy for the depressed condition of the agricultural labourer. As regarded wages, he remarked that in the West Riding of Yorkshire, where he lived when in the country, the sum paid was 15s. a week, adding that he was not at all sure that if Dorsetshire labourers came to that district employers would be willing to give them the same amount (Hear, hear). He denied that peasant proprietorship would raise the condition of the agricultural labourer. Land was a luxury, and if a poor man owned it, it would best answer his purpose to sell it and invest the money in something else. Peasant proprietorship would be retrogressive; it implied spade husbandry, and a large amount of work for a very small production, and it would, in fact, be like the manufacturers of Lancashire going back to manual labour.

Mr. POLLARD-URQUHART, M.P., hoped those present would not be daunted by difficulties from pursuing the object in view. He doubted whether the principle of co-operation could be applied to any great extent in large and scientific farming in the districts where the labourer was paid the best, for example Lincolnshire and the Lothians, but in other districts it might be. By promoting their education they would do much towards enabling labourers to make terms for themselves.

Captain F. MAXSE, R.N., after advocating extended education, said he hoped that in the discussion of that question it would not be assumed that one class was necessarily hostile to

another. It should be recollected that wages were regulated by supply and demand, and that it was impossible for any individual farmer to produce the desired change.

The Marquis of TOWNSHEND agreed with Professor Fawcett that without education there could be no real improvement in the condition of the agricultural labourer, while even compulsory education would be of little avail without proper dwellings for labourers.

Mr. BISS, of Buckingham, described the efforts which he had made, amid the opposition of farmers, to remove labourers from his own locality to Kent and other counties, where they had obtained, instead of 10s. a-week, from 12s. to 16s.

The Hon. AUBERON HERBERT expressed fears as to the working of unionism among agricultural labourers, whose education and intelligence were so inferior to that of artisans generally, and who might, therefore, be led into acts of a serious character. Alluding to the increasing pauperism of large towns, he maintained that the only thing that would mitigate the evil was a system of public works applied to the reclamation of certain parts of the sea, the Severn, and the mouth of the Thames.

Mr. GEORGE POTTER, after defending trades unions, and remarking that the acts of violence alleged against them were confined to a very small number of persons, dwelt on the fact that of 66 million acres of land in the United Kingdom only 36 millions are cultivated, and argued that if proper measures were adopted 20 millions of these might be cultivated so as to benefit the labourers and the nation generally. He also ridiculed the notion that a union could produce any practical effect without being aggressive. In conclusion, he acknowledged that there were many landowners who had set a noble example as regarded the labourers on their estates, and disavowed on his own part any wish to set class against class.

Mr. SMALL, of Buckingham, remarked that whatever might be said in favour of extended education, the great and crying evil was low wages.

Mr. G. BROOK testified from observation to the dependant condition of labourers in Norfolk.

Mr. LLOYD JONES said he did not believe in the remedies proposed by Canon Girdlestone. The effect of merely stirring up men in the way contemplated on a large scale might, he observed, be to bring down high wages to a level with low ones. In his opinion it was well worth the consideration of landlords and tenants whether the labourers should be allowed to share in the benefit of increased rents and profits.

Lord NORTHBROOK said he wished to protest against the assumption that the condition of agricultural labourers generally was such as to be an opprobrium to this country (Hear, hear). In certain parts of the country wages were certainly too low, but in others they were fair and remunerative. There were, he believed, only about three counties in England, where wages were under 10s. a week: they were Devonshire, Buckinghamshire, and Wiltshire. In the greater part of the country wages ranged from 10s. to 15s. The other day he saw an extract from a pamphlet written by Mr. C. S. Read. The hon. gentleman stated that in his own county (Norfolk) wages were about 14s. a week. In his (Lord Northbrook's) county, viz., Hampshire, taking the year through, the wages amounted to from 14s. to 16s. a week. The chairman instituted a comparison between the 7s. 3d. received formerly and the wages paid now. He believed that if the comparison were worked out, it would be found that the 7s. 3d. paid at the period referred to was not equivalent to the wages received at present. No doubt the prices of many articles had increased, but on the other hand free trade had greatly reduced the cost of tea, sugar, and many other articles of that kind, while bread itself was probably as cheap now as it was then (Hear, hear). As regarded the proposed formation of unions, the noble lord remarked that if a union were formed it could only be for the purpose of raising wages; that wages could only be raised by means of a strike; and that therefore the purpose of a union could not be, as Canon Girdlestone wished, simply protective. He (Lord Northbrook) deprecated a union for strikes, as tending to damage both labourers and employers. He entirely agreed in the object of Professor Fawcett's resolution with respect to education, but objected to the Conference being pledged to the precise wording of the resolution. In conclusion, the noble lord pointed out, as among the causes of the depressed condition of agricultural labourers, the administration of poor relief, under which, when a man was ill or became old, he almost

always regarded himself as a pensioner; indulgence in drink; and, lastly, the truck system.

Mr. PEARE followed with some remarks in favour of applying the co-operative system to the improvement of agricultural labourers, and referred to some experiments of the kind as an illustration.

Mr. C. S. READ, M.P., said at the special request of the Secretary he attended that Conference as the representative of the tenant farmers of England. Before coming he thought he was going into the camp of the Philistines: his expectation had been realized (laughter). If they had met together for the purpose of improving the stipends of poor curates, they would not, he submitted, have promoted the object by alluding to isolated cases of large incomes of incumbents; and in like manner, he did not think the best mode of dealing with that question was to take isolated cases connected with the wages paid by tenant-farmers (Hear, hear). He wanted the Conference to treat this question as any other similar question would be treated. They had been told that the agricultural labourer was restricted to certain localities. That might have been the case some years ago; but now that the Poor-law settlement was altered, and a man could carry his labour to any part of England, restriction could not be said to exist as it did some years ago. Any young man in the county of Buckingham who liked to save 10s., and what young man was there who could not do that? (he was now speaking of unmarried men), might transport himself to any part of England where wages were higher. He would particularly request the Conference to remember that the amount of weekly wages, as quoted in the newspapers or in the Journal of that Society, was no test of the value of the wages to the labourer. If they found agricultural labourers in one place paid 1s. 6d. a-day and in another 2s. 6d., and if, at the same time they found task work, such as mowing and hoeing, paid exactly the same in the two places, what did that prove? Let him illustrate this point. He went down in the winter to Devonshire, and there he heard that labourers were receiving 9s. a-week, while in Norfolk men were receiving 13s. On inquiring, however, he found that in Devonshire the labourers had a house, and two pints of cider, and that they infinitely preferred the allowance of cider to a shilling a-week. Then, they often had "the run" for a pig in the farm-yard; and in point of fact they were as well off with their 9s. or 10s. a week as the labourers in Norfolk were with 13s. (Hear, hear). To this he might add that there was a difference in their favour as regarded the hours of labour. Altogether there was not, he felt satisfied, so great a difference in the wages of agricultural labourers as was generally imagined. One of the previous speakers alluded to Kent. He (Mr. Read) was there that day week, and he found that the labourers were receiving about 15s. a week. But it must be borne in mind that the Kent labourers worked eleven hours a day, while in his (Mr. Read's) parish they never worked more than nine hours. The other day he said to his men, "I will give you all a shilling a week more if you will work ten hours instead of nine." They all said they preferred nine hours with 12s. a week to ten hours with 13s. Again he said, most advisedly, that labourers generally transplanted badly. In his humble way he had attempted to settle men in other districts; but in the majority of instances they had returned, preferring the lower wages of the old district to the higher wages of the new one with longer hours. He thoroughly agreed with Lord Northbrook as to the evil of those who were ill or became old almost always wanting to be pensioned by the parish. But was there such a wondrous difference between those in the country and others in towns? Although there might not be a great amount of prosperity and success among the agricultural labourers, nowhere would they find such misery, distress, and destitution as were now raging in the East of London (Hear, hear). With regard to education, they were told that farmers would not educate the labourers—that they wanted to keep them ignorant. He had no doubt that if a fair comparison were made between the poorer educated agricultural labourers—and he was happy to say that labourers were educated now, more or less—and the poorer and lower class of unskilled labourers in the great towns and cities, the palm would be awarded to the country rather than the town districts (a voice, "That is very doubtful"). Well, that was his opinion. He would conclude with a bit of practical advice to the Conference. If they wanted to make that conference of any benefit whatever to the agricultural labourer, it should be by doing all in their power to co-operate with the employers of labour. Let them not

treat employers as if they were a parcel of men who were bent on grinding down the labourer; but let them remember that the tenant farmer had to compete with the whole world, and that therefore it was quite possible that he was not in a position to give the agricultural labourer what they might consider to be his due (Hear, hear).

The Secretary, having risen at the request of the Chairman, expressed his strong sense of the importance of the Society's object, and its claims to the support even of land-owners and farmers.

The Earl of LICHFIELD pointed out the impossibility of his pledging himself in any way to the principle of unions, seeing that he was one of the royal commissioners who were then engaged in an inquiry into the whole subject of the working of trades' unions. He also opposed the notion that landlords and tenants have no sympathy with labourers, by remarking that it is a very common thing for the three classes to meet together to discuss what is best for the interest of the labourers.

The Chairman then proceeded to put Canon Girdlestone's resolutions *seriatim*.

The first resolution was adopted almost unanimously.

The Chairman being about to submit the second resolution, Mr. PEARE contended that the most desirable course was, in the first instance, to appoint a committee to digest a scheme, and report to a future meeting; and moved an amendment to that effect.

Mr. CRAIG seconded the amendment.

After a rather warm discussion, in which Mr. Baxter Langley and Mr. Beales supported the original resolution and Sir E. Lechmere the amendment, the latter was put and rejected, the numbers being 24 for the amendment and 29 against it.

The original resolution was afterwards adopted in the following amended form: "That, as one means of raising the agricultural labourer from his present depressed condition, it is desirable to encourage and assist the formation of Agricultural Labourers' Unions."

The next resolution was, after some conversation as to its precise wording, adopted in the following altered shape: "That these unions should be carefully guarded against all possibility of violent aggression either on employers or fellow-workmen, and that their chief object shall be to secure a fair remuneration to labour in proportion to skill, ability, and industry."

On the fourth resolution of Canon Girdlestone, relating to the appointment of a committee "to be employed in forming the above societies, &c.," Lord Northbrook suggested the insertion of the word "unpaid," in order, as he stated, that agricultural labourers might not be called upon for expenses. But Canon Girdlestone objected to the suggestion, on the ground that it was inconsistent with his principle of giving a fair day's wage for a fair day's work, the matter was not pressed.

The resolution was ultimately adopted in the following amended terms: "That a committee be at once appointed to manage the details for organizing the above unions, and to direct and superintend their work, and to draw up a code of rules for the use of these unions, and to promote in all possible ways, both physical and moral, the improvement of the agricultural labourer."

The fifth and last resolution of Canon Girdlestone, having reference to the creation of a fund for defraying expenses, was adopted without discussion.

Mr. FAWCETT, M.P., then proposed his resolution relating to education. A considerable amount of discussion took place, chiefly between the hon. member and Lord Northbrook, as to the precise wording of the resolution, the noble lord contending that it was not desirable for the Conference to pledge itself to Professor Fawcett's views as to the period when education should be given, and moved, as a rider, Mr. J. C. Morton seconding, the addition of the words, "or by adopting some equivalent legislation"; but these words, which were in fact proposed to be added after the resolution had been carried, were rejected by a considerable majority, and the resolution as passed stood as follows:—"That in the opinion of this Conference the condition of the agricultural labourers will continue to be unsatisfactory and depressed until their education is secured, by compelling children under 13 years of age to attend school so many hours a-week."

The proceedings, which were very prolonged, occupying about four hours, terminated with a vote of thanks to the Chairman.

THE EMPLOYMENT OF WOMEN AND CHILDREN IN AGRICULTURE.

At a discussion meeting of the Framlingham Farmers' Club, held on Monday, March 9th, a paper was read by Mr. Herman Biddell on "The Employment of Women and Children in Agriculture, socially and economically considered." Mr. F. S. Corrance, M.P., the president of the club, was in the chair.

The CHAIRMAN having briefly introduced the lecturer,

Mr. HERMAN BIDDELL said he was not aware at the time the subject of employment of women and children was suggested to him that agricultural education was to be the title of a lecture for another evening's meeting. Education was a very wide field for debate. Employment of children without relation to it admitted of very little discussion, and he therefore asked them to make all due allowance if he did not adhere so strictly to the subject set down to him as he might otherwise have done. Noticing the agitation as to education which had arisen, and the imputations cast upon agricultural districts as to the state of the population, and observing that some of the charges were not ill-founded, as the report of the Parliamentary Commission and the subsequent passing of the Agricultural Gangs Act proved, he said they might expect attempts to include agriculture in the application of an extension of the Factory Act. What was wanted was a detailed knowledge of the circumstances and requirements of the working man in the rural districts, and to arrive at this the Commission originally appointed to inquire into the working of the gangs was still extending its inquiries. The object of the Commission was to inquire into the employment of children, young persons, and women, in agriculture, for the purpose of ascertaining to what extent, and with what modifications, the principles of the Factory Acts could be adopted for the regulation of such employment, and especially with a view to the better education of such children. The allusion to "excessive labour" as applied to women and children engaged in farm-work did not, it occurred to him, call up feelings of hardship and oppression, inasmuch as the women he had seen employed in agriculture appeared to come when they liked, leave off when they liked, and do just the amount of work they seemed to find most agreeable. Excessive labour, except under a gang-master, was an expression totally inapplicable to the case of any boy he ever met with employed on the land. The Factory Act was passed to secure to the operatives of the crowded centres of industry in the Midland districts shorter hours of labour for the purpose of providing an amount of rest necessary to maintain life, and of affording time to educate the rising generation. It was certain that the duration of life in the manufacturing districts was very short compared with what it was in the southern agricultural counties. A recent return of the registrar-general gave the deaths per thousand thus: Leeds, Bradford, and Birmingham, 24; Sheffield, 25; Manchester, 29; Salford, 33; while in Suffolk, according to Mr. White, it was only 18½. The official report for 1851 of the census gave the average duration of life in Manchester 25, and in Surrey 45. How much of this difference was due to the densely packed dwellings, want of fresh air, proper sanitary accommodation, and pure water incidental to populous cities, and how much was the result of close confinement and unhealthy employment attending the life of an operative in cotton, iron, and woollen manufacture, was a matter of question. In Manchester not half the children born reach the age of six, hence they must not charge a system of labour with the onus of shortening the average duration of life when the enormous per-centage of deaths at a very early age pointed to causes incidental to crowded cities, but not necessarily to the employment in which the working classes were engaged; nor must it be expected that the operation of restrictive laws of the nature of the Factory Act would equalize the death rate. What effect attended the introduction of the Factory Act to these places, if any, he did not know. There was, however, still a great difference between the duration of life in Manchester and that in the agricultural counties. He supposed some had an idea that by introducing a modification of the Factory Act into the employ-

ment of children in agriculture the difference might be made still greater. That was the question, or one part of it, that they had to consider. They who lived in the country had always been under the impression that field work, if not an intellectual employment, was at least healthy—(Hear, hear,)—but others thought differently. They were not charged with suffocating their little boys in the close atmosphere of a crowded room, injuring their bodies by hours of labour in one position prolonged beyond their powers to endure; but they were charged, rightly or wrongly, with encouraging a system which acted just in a contrary way. Women and children in gangs were said to be dragged miles to labour, drenched with rain, and worked beyond their powers of endurance. But an Act was passed which would, it was hoped, put an end to all this, and they might dismiss this part of the subject; but as a clause in the instructions to the assistant commissioners, alluding to private gangs, pointed to further legislation, and from private gangs to individual labour, the words used might prepare them for an extended application of the Factory Act, unless by speaking out honestly and audibly they could show it was unnecessary or inapplicable to agricultural labourers. The eleven questions concentrated on the point whether the hours of labour, the age at which the labour commences, and the rest and refreshment during those hours, needed to be under Government regulation for women and boys and girls employed in agriculture. Apart from the gang system, which had already been dealt with, and apart from the question of education, he unconditionally answered "it is not." First, as to women, provided there was a family and that family had enough to live upon without the wife's earnings, no doubt it was very much the best—the cottage would be better managed and the house more comfortable—that the wife should not go to field-work. In cases where there was no family, and where by a little neighbourly help and short hours the wife could add a little to the husband's earnings even when there was a family, those earnings came very acceptable. He knew cases where the families were not small and the domestic matters well ordered, and yet the wife was out at field-work pretty often. Then, again, it was not out of the range of possibility that the open-air labour, the company in the field, the change, the gossip, might entice those away from home whose presence there would save more than their earnings amounted to. These were varied circumstances to which no law as to hours of labour could be adjusted, and he was of opinion that legislation applied to adult labour, either male or female, should be called for by urgent necessity and nothing less. He could only look at this matter as a question for the employed to settle, and they must be guided by the circumstances of their own position and the inducements which the employment at hand offered at the time. This applied to adult women; how far it would be advisable to discountenance the employment of girls under 20 in field labour was another question. The remuneration now commanded for indoor servants from funder-dairymaid to superior cook, left no necessity for providing the daughters of the labouring population with other sources of employment. He almost thought they were wrong in giving outdoor work to that class at all. As to boys, more was to be said. He did not enter into the question whether a boy should not be prohibited from working before he was a certain age for the purpose of securing a period for education; the question of excessive labour and long distances travelled to the place of work were dealt with under the public-gang-system regulations, and the question remained of private gangs and employment in the crow-field or the cattle-shed. He admitted the private gang system was liable to abuse, and said, however many children a farmer might set one of his men to look to, he did not lose the responsibility every man had or ought to have towards those in his employ, and unless unusually callous to the dictates of humanity he would be as careful of their welfare as for those who fed his sheep or milked his cows. He was somewhat at a loss to conceive what were the circumstances which suggested to the Commissioners the desir-

ability of applying legislative interference to the boys who were employed in keeping rooks, tending sheep, cleaning beet-root, or leading horses. These were the "various processes" mostly carried on by boys, and he confessed he could not see where the law could step in and mend the position of the boy who was thus employed by enacting measures of restriction on his behalf. That there were masters who were deaf to the calls of humanity in their vocation as in others he did not deny, but he could not clearly see where the law could supply by force what their better feelings ought to provide. Would the Factory Act or any extension of its principles compel the farmer to buy the boy a mackintosh or cork-soled boots? They might say that to clean rooks all day for sheep might be the most certain preparation for future days of the dullest intellect, and that no chance for brightening the brains could come to one who was so employed; but he was afraid no commission would be able to suggest anything by way of improvement through the hand of the law. The "excessive labour" charge had, however, very recently been publicly reiterated. He admitted he knew nothing of what was the custom in Gloucestershire, where it was said boys were kept at work frightening crows for 16 hours out of 24; but he knew something of Suffolk boys and Suffolk birds. There was a colony rooks pretty close to his house, and he had a pretty numerous staff to defend his crops from their depredations, but he never knew in the months of March and April the battle between them to last from four in the morning to eight at night. Gloucestershire rooks must be very "early birds." Birds in East Suffolk did not commence operations before it was light, nor carry on the habits of theft after dark; but as this came on the authority of a very excellent man, the Rev. J. Fraser, one of the assistant commissioners, it was, of course, entitled to some consideration. Excellent men were, however, occasionally misinformed, and he was inclined to think there was a little latitude to be allowed for on this occasion, and as the statement was supplemented by information from the same authority to the effect that "it was considered necessary for boys to be in the field from the first thing after sunrise and to remain in the field till sundown," these 16 hours, according to clock time of year, and by virtue of the application of the science of arithmetic to the statement, would be reduced by some five or six hours. Then the herd of boys of 11 being at work with horses 14 hours. He did not know what a Gloucestershire 11-year-old boy was like as to size and physical capabilities, but boys of eleven did not clean horses and manage a full-sized horse in a hay-cart in Suffolk; the boys were too small and the horses too big in these parts. He believed, however, it was admitted that these instances were "exceptional" and "solitary," and he did not think such should be put forth to describe a general practice. That future generations of the agricultural labourer were to be exactly like the majority of the present he was not quite persuaded. Farmers as a body did not always do the best by the little boys they had about them. He did not think the extension of the Factory Act would make them a bit better in that respect, but a little thought and a good deal of attention might improve matters vastly. They were differently situated to trades and professions. If a boy went to a farmer, and he put him to plough for a year or two, he made sad havoc with the drilling and horse-hoeing through his inexperience in laying a level stetch; but the moment he could do the thing as it should be done (in the meantime having spoilt the mouths and tempers of half-a-dozen good horses) he immediately started on his own account, and became the servant of the first man who would give him 1s. 6d. more than his old master. In trades, the master secured to himself, by agreement, some years of service after the boy had learned the rudiments of his business. It was not very encouraging for a man to take a boy, teach him to plough, and then, when he was of some use, see him start off for some other sphere, only to leave the plough-handle vacant for the next to try his hand on; but that was no reason why they should let the labourers' boys speak, move, and think at a pace a hundred years behind the speed of any other mortal this side the Tweed. There was no reason why the boy who was bred and born in an agricultural district should not be as intellectual as boys who were bred and brought up in the busy din of a commercial city, and he instanced the case of a boy placed under the supervision of a crafty groom who had learned to meet the curse of Adam by wringing the sweat out of the brow of his help, instead of out

of his own. They said that was a "smart boy," and if the master would take the same pains with each individual boy, whether he was a tender of cows, a feeder of pigs, or a jack-of-all-trades in the farm-yard, he also would be a "smart boy." Let them impress on the boys that no such thoughtless answer as "don't know" and "can't" would be allowed; make them speak sharp the moment they were spoken to, answer the moment they were called, and run the moment they were wanted. Take care that they would have this done, and point at certain penalties in case of disobedience—not the ash stick, or the box on the ears—probably that had been tried at home; but give the boy to understand that unless he imbibed smartness he would be sent the first long errand on foot that turned up, or when the other boys were gone home he would have to stay at work half-an-hour alone, and recollect that a well-judged word of praise went a long way with a being to whom such words were rare. Two bright penny-pieces to a lad whose only assets were a pocket-knife, a whip-stick, and a copy of Watts' hymns, were a wonderful inducement to do a job quickly and carefully. Some would be grateful and repay them for the trouble. Perhaps he had a weakness for boys, and was apt to take the bright view of a troublesome truth—they would think so when he said he had nine on one farm of about 270 acres. On these he had practised the system he had recommended; and if he had some full of mischief, some stupid, and others careless, if some were idle and others better disposed to work, if they were no better than boys differently treated, he knew they were brighter, more useful, quicker, and far more obliging than they were before he paid any attention to them. He did not believe they required to put wits into the heads of their rustics, so much as they wanted to make those wits work, which they were already possessed of. A like attention paid to the morals and the manners of the boy when under the control of the master had a marked effect on the address and conduct of the lad. The habit of using bad language, cruelty, prevarication, and deceit should be shown in their true light, and on detection a master should seriously, firmly, but calmly explain the consequences of such habits. The words of an earnest, dispassionate man had a powerful influence for good on a lad to whom the oath and the ash stick were the common means used to impress new ideas on his mind. He strongly urged the importance of the personal influence on the part of the master; and, turning to education, while saying God forbid that he should raise a finger to retard the efforts of those who wished to extend to the meanest agricultural labourer the blessing of a knowledge of how to write, he expressed his doubts whether the sanguine expectations indulged in by those who looked for a millennium of intelligence, elevation, and improvement by compulsory education were not doomed to disappointment. He commended the late legislation as to agricultural gangs, and Lord Shaftesbury for his efforts, and only hoped he would carry them further, though by carrying them to the quarter he (Mr. Biddell) alluded to, his lordship would not be popular. Throughout the country a practice was universal, compared to which in its yearly results in evil effects the gang system was but a harmless triviality; but he was afraid even the zeal of Lord Shaftesbury would shrink from the task of subjecting the glances to the regulation of legislative enactment. In conclusion Mr. Biddell said he thought legislation not uncalled for in its application to the gang system. Legislation applied to adult female labour he believed absolutely unnecessary and uncalled for. Government restriction in the employment of the young and private gangs, and the "various processes" alluded to, was equally superfluous for purposes otherwise than for education; how far it was necessary on that account their discussion in January should have determined.

Mr. S. G. STEARN introduced a labouring man named Barker, belonging to the parish of Brandeston, who had been a gang-master and had brought up a large family. He had always sent them out to work, and yet had given them all an education so that they could write, read, and cipher.

BARKER, in reply to questions put by Mr. Stearn, said he had six children. They went to work when they were seven years old in the regular way. In reply to the question What kind of work? he said, "Anything that came in the way." He first sent them to an infant school and paid 2½d. a-week each for their schooling. After they began to work, when they were seven, he sent them to school on the days that there was no work for them. In reply to the Pres-

dent he said the wages of a child of seven were 3d. per day, and the children earned enough in the summer to find them bread.

MR. STEARN: How would it have been if they had not worked?

BARKER: I should have had to send them to Wickham (the Workhouse).

MR. STEARN: Those that had not been out till they were 12 or 13, were they then as useful as some that were younger?

BARKER: I had some that did not begin till they were 13, but I don't want any more of them—they were too much afraid of their hands. In reply to the President he said the children's wages rose a penny a-day for each year they were above seven, so that at ten the wages were 6d. a-day. Girls at ten looked for more than the boys, because when it was a little wet they could not expect to make so much time as the boys, and they always looked to pay more for them than the boys.

THE PRESIDENT: You give the girls more because they don't earn so much?

BARKER: Yes.

MR. BARNES: It is to keep the gang together?

MR. BIDDLELL asked how the boys kept up their education after they went to work?

BARKER said his boy bought a copy book with copies in it, and wrote "of a night." The first school he sent them to was a dame's school, where he paid 2d. a-week, and afterwards to Mr. Austin's school where he paid 1d. a-week; but if they were at work in the fields in the early part of the week they could not go to school in the latter part.

MR. G. A. JEAFFRESON said Mr. Biddell had certainly made out a very strong case that legislation would be advantageous with respect to the employment of juvenile labour in agricul-

ture. He had drawn a picture of the stolid stupidity of the boys, which surely would be rectified by their being sent to school.

MR. D. SMITH, jun., also spoke with reference to education, observing that there was a growing desire on the part of the agricultural labourers to educate their children. He had lately met one or two who had said, "I can't let my children go to work, because I wish them to go to school a little longer," and he thought no legislation was required on the subject.

THE PRESIDENT spoke at some length, but also upon the educational question, using arguments against compulsory education which have been again and again reported during the last two or three months.

MR. BIDDLELL, in replying remarked on the circumstance that every speaker had alluded to the branch of the subject—education—which he had himself avoided, it having been fully discussed in January. Referring to Mr. Jeaffreson's remarks, he asked him if the life of children in manufacturing districts was as good as that of those in agricultural districts, how was it that the average length of life was 25 in Manchester, and in the rural districts it was 45? He also asked whether Mr. Jeaffreson could say that the deaths under 6 in Manchester were not far greater than in the country?

MR. JEAFFRESON quite agreed that they were probably larger in Manchester, but asked what they were in the agricultural districts, that they might make a comparison, as he believed they would find the deaths in the rural districts larger than they expected.

MR. BIDDLELL thought 12 quite soon enough for a boy to go on to the laud, but whether his parents could spare his earnings till that time was another question.

Votes of thanks to the lecturer and the President concluded the proceedings.

MESSRS. J. & F. HOWARD v. MESSRS. RANSOMES AND SIMS.

It will be remembered that the dispute between these two firms was referred to Mr. W. Fairbairn, who has just issued the subjoined decision:

Whereas a letter, of which the following is a copy, was addressed to me the undersigned William Fairbairn, of the City of Manchester, engineer.—London, December 5, 1867.—William Fairbairn, esquire, Dear Sir,—A question has arisen which has led to a dispute between the undersigned, relating to a paragraph which appeared in the public papers on the Paris Exhibition Prizes. We have agreed to refer the question in dispute to the decision of an umpire, and you will confer a favour upon us if you would consent to occupy that position. We believe the question involved to be so simple, that very little of your time would be required should you do us the favour to act. Trusting that you will oblige us by doing so, and that you will name an early day on which you would allow us to meet you in London, we are, yours faithfully,

RANSOMES & SIMS, JAS. & FRED. HOWARD,
Orwell Works, Ipswich. Britannia Works, Bedford.

And whereas the dispute between Messrs. James and Frederick Howard and Messrs. Ransomes and Sims relates to a paragraph published in the *Morning Star* and other papers by Messrs. Ransomes and Sims, which paragraph, according to Messrs. James and Frederick Howard, is calculated to convey to the public an erroneous impression regarding the respective merits of these firms as engineers. The following is a copy of the paragraph in question:—

"Paris Exhibition: The following special awards have been made to English and American firms who took part in the great agricultural Exhibition at the Island of Billancourt:—

"First Grand Prize to Messrs. Ransomes and Sims, of Ipswich. Second ditto to Messrs. James and Frederick Howard of Bedford. Third ditto to Mr. McCormick. Fourth ditto to Mr. C. R. Markham, for the successful introduction of the cultivation of quinine into British India. Second-class prizes, consisting of a gold medal and an objet d'art, have been awarded to Messrs. Walter Wood and Company, Messrs. Smyth and Company of Peasenhall, and Messrs. Garrett and Sons, of Leiston. English subjects, not being permitted to receive foreign decorations, a special silver medal

has been awarded to Mr. John Head, one of the partners of Messrs. Ransomes and Sims, who are the only English manufacturers thus honoured at Billancourt."

Now I, the said William Fairbairn, having taken upon myself the said reference, and having heard the statements of the respective parties, and it appearing that although Messieurs Ransomes and Sims first were placed on the list entitling them to a grand prize, yet that Messieurs James and Frederick Howard were also on the same list, and entitled to a similar grand prize as Messieurs Ransomes and Sims, I am of opinion that both firms were on perfect equality as respects the verdict of the jury, and that no priority or superiority was implied or intended to be implied by the placing of one name before the other; and I find and am of opinion that the expression in the paragraph, "First grand prize to Messieurs Ransomes and Sims of Ipswich, second ditto to Messieurs James and Frederick Howard of Bedford," and to which expression Messieurs James and Frederick Howard object, is ambiguous and improper, inasmuch as the words "first" and "second" might give to the reader of them an erroneous impression of superiority in Messieurs Ransomes and Sims, whereas both the said firms are on an equality with regard to the grand prizes awarded. I am further of opinion that the words objected to were used inadvertently by Messieurs Ransomes and Sims, and not with any intention to mislead or to claim more than they were entitled to.

As witness my hand this twenty-seventh day of March, One thousand eight hundred and sixty-eight,

WM. FAIRBAIRN.

Signed in the presence of Henry Charleswood, solicitor, Manchester.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—To explain Mr. Fairbairn's concluding remarks, we deem it necessary to say that before we consented to refer the question to arbitration, we asked Messrs. Ransomes to admit or deny the authorship of the paragraph we complained of. They at once admitted having supplied it to the daily papers.

We are, yours most respectfully,

JAMES AND FRED. HOWARD.

THE CULTIVATION OF THE POTATO.

[TRANSLATED FROM THE FRENCH.]

1. Do not take up the late potatoes until the end of October ; that is, when they are perfectly ripe.

2. On the contrary, the early potatoes should be taken up towards the end of September. A longer time in the earth would cause them to germinate prematurely, which must, above all, be avoided.

3. Immediately after raising, spread and leave upon the ground for at least a month those that are intended for planting, in order to make them turn green under the action of the sun and light, taking care however to move them many times, and to shelter them from frost if it should intervene. This process, which I pointed out first in 1855 in a notice of the 2nd of January, has been constantly practised with success—especially by M. R. R. Gautier, a distinguished horticulturist of Paris, to whom I had personally given this notice, and who, two or three years after, circulated in *his own name* this process, forgetting, without doubt, from whom he received it.

4. After having thus made the tubers green, they should be taken to a dry place, and laid upon rough hurdles, instead of putting them in heaps. These hurdles, made of the boughs of trees, are for farmers much more ready and economical for use than the boxes with glass covers invented since by M. Gautier, and they produce the same effect ; but it is necessary to be careful, in laying them on, to leave an interval between them, by means of three small supports of wood, in order that the air and light may circulate and that the tubers may be removed by hand.

5. In order to retard the germination of the potatoes intended either for planting or consumption, they should be frequently moved to change the direction of the sap, which always tends to flow towards the eyes, which by the position of the tubers are found placed underneath. By these frequent removals of the tubers we alter the direction of the sap for the moment from its natural course—that is, the vertical one. I have explained at length these several phenomena of vegetation, germination, and circulation of the sap in the paper which I read at the meeting of the Sorbonne in March, 1864.

6. With this precaution, always in places free from moisture, we may also preserve potatoes by mixing them with the ashes of a lime-kiln or of a bread-oven, or with cinders. We thus prevent the fermentation and special change that is so often produced after the crop is taken up.

7. For planting, we can perfectly preserve the potatoes by laying them, immediately after raising the crops, in trenches three or four feet deep, and covering them with earth strongly rammed down. At that depth, they will not germinate if the operation is properly performed.

8. As for the potatoes intended for consumption, it is particularly necessary to avoid laying them up moist. They should be plunged into a lime-wash strongly salted, prepared in a kieve. The tubers are placed in a hand-basket, and dipped several times in the cold liquid, and then spread to dry before laying them up. The light coat of lime and salt which covers them, preserves them from fermentation and prevents them from decaying. This preparation is also excellent for those tubers intended for planting ; but it should be applied before any appearance of germination, and therefore immediately after the harvest, because the contact of the lime-wash with the potato sprouts makes them turn yellow, injures, and may even destroy them.

9. Employ for seed the potatoes of autumnal or February planting, very ripe, whole, and of a medium size, and take care to place the *crowns* upwards. The shoots of the crown are the most numerous, vigorous, early, and productive. The reversing of the tubers in the ground retards and opposes the natural development of the germs.

10. In soils of a moderate quality I have obtained good crops by employing large potatoes for seed ; but, in a good soil, they throw out stems of too great vigour, which attract to them a portion of the sap that ought to be absorbed by the tubers, the size of which, if not the number, is reduced

thereby. This inconvenience is remedied by cutting the large tubers in two and across, and afterwards dividing the crown in two. The lower part of the tubers bearing the latest, less vigorous, and least-productive germs, often *filiform* (vulgarly called *females*), should be reserved for consumption. When we divide the tubers, it should be done at least a month before planting, in order that the wound, in drying, may form a hard crust, which preserves the pulp from decay and the attacks of insects.

11. If, instead of giving the small potatoes to the cattle, we wish to utilize them for planting, there are two ways of obtaining from them large results. If the plough is the implement of culture, we plant these small potatoes (which throw out only one or two stems and two or three tubers) at three inches distance in the rows. In gardens where the spade is employed we ought to plant five or six tubers in a circle of a foot diameter, and placing three or four in the centre. By this means we obtain a cluster, not of very vigorous plants, but yielding, by reason of their great number, a considerable return. This second method of planting might also be practised in field-culture ; but it is necessary, after the plough, to harrow the land well, and plant with a dibble, leaving a space of at least a foot between the clusters on the line. The potatoes thus obtained should be used for consumption, but not for reproduction.

12. Planting should be done as much as possible in land that has been heavily manured for the previous crop ; in gardens, for instance, after turnip and cabbages ; in the field, after colza, buckwheat, hemp, flax, beetroot, &c.

13. Generally, the late potatoes are planted late ; but this is wrong. They should be planted in February, like the early ones. The late ones, requiring more time to accomplish all the phases of their vegetation, require to remain longer in the ground than the others.

14. Planting may be performed advantageously in the autumn ; but, as I have stated many times since 1852, I prefer the fine days in February. However, of these two periods, but especially in the autumn, they require special precautions.

15. For planting in February, and in default of a soil sufficiently manured for the previous crop, we ought to give it as soon as possible in the autumn, a first very deep ploughing, in order to bring up a bed of earth, new or next (but vegetable) to the surface of the soil. In compact land we shall give, some time after, several strong harrowings, in order to pulverize the earth. We then manure the field, and, by a slight ploughing, just cover it.

16. At the time of planting in February we shall give a fresh ploughing, not very deep, in order to leave on the surface of the soil the couch of new earth, and to preserve on it the manure. It is this earth that will receive the benefit of the winter.

17. At both periods, and in every case, the lines of planting ought to be laid out with spaces of one metre (about 1 1-10th yard), in order to earth up strongly during the winter, to protect the seed-tubers from frost. With this space, also, the crops are much more abundant, and have greater chance of escaping the disease.

18. In light, dry soils and on hill sides we plant about 15 to 18 centimetres deep (from 6 to 7 inches), and at once give it an earthing-up to the same height, with the earth taken on each side so that each ridge should be at least two feet wide.

19. In heavy or moist land we plant on the surface of the soil, and immediately give a strong earthing-up to the height of 25 to 30 centimetres (9 four-fifths to 11 four-fifths inches), which ridges the land at the same time.

20. In land not previously manured the manure may be applied in the following manner : When the tubers have been planted, not deeply in the ground, or having been laid on the surface of the soil, cover them over with a slight coating of earth—say two or three inches ; then with a fork cover this with dung in such a manner as that it will reach an extent

equal to that which the spreading of the tubers will require; then ridge it up as is directed above. The manure being thus placed in the ridge, between two earths and above the tubers, produces the best effects. On several public occasions, I have explained at length all the advantages of autumnal planting, but especially of February, according to the processes again explained here, and on the occasion of which my colleagues Messrs. Bossen and A. Pagny cannot contest my claim of priority. I also asked on the 14th of January, 1853, that they would construct a plough and harrow specially for this method of earthing-up, which has been responded to by the invention of M. Pagny. In this system of earthing-up, the deep furrow by which each ridge is flanked forms a perfect open drainage, as I have stated in my memoir.*

21. If the earthing-up is performed with the plough or with an ordinary spade, it is indispensable that two men should follow with a hook and a strong rake to regulate the earthed-up surface.

22. There is still another means of manuring which I have pointed out, and which generally yields good results, but which is opposed to the rule:—science: it is to use half dung and half lime, instead of either of these manures alone. The formation of nitrates which takes place from their contact is doubtless the cause of their good effects. We may also employ with great advantage a compost of lime and earth at the time of earthing-up. Before doing the latter, we spread with the shovel the compost upon the line of the planting, and earth-up immediately after. The lime placed thus between two earths, does it not absorb the humidity of the soil, and contribute to its aëration, its pulverization, and its warmth? If it neutralises the action of the abnormal atmospheric influence, to which I have without ceasing attributed the principal cause of the disease, I know not how to account for the success; but I have practised this process extensively.

23. From the month of August, 1852, and many times since, I have also advised the employment of ashes not washed, or buck-ashes. By sowing a pinch of it, upon and around each tuber at the moment of planting, we obtain excellent crops, and frequently escape the disease.

24. When there is no longer fear of frost, we pull down with the rake or fork in small culture, or with the harrow on the large scale, about half the winter earthing, the mould of which is pulverised under the many atmospheric influences, and which, in this state, is ready to form the final earthing. This system of earthing up or laying in ridges, unearthing, and re-earthing is equally applicable to other cultures, above all as a means of promoting the pulverisation, aëration, and warming of the couch in which vegetation has to be accomplished—not only potatoes, but also beet-root, and even wheat, if it has been applied previously, at the end of summer or the commencement of autumn. I was glad to see it adopted by one of the most eminent agriculturists of the North, to whom I had addressed my notices, and who has found a way of applying it with great success with different plants. In his letters M. de Renneville had already expressed his entire approbation of it, as well as of my advice of planting in February.

25. When the stalks begin to pierce the soil, and not when they are twenty or thirty centimetres, we give them a new and last earthing up, preceded by a light harrowing. It is then that we may, after having mellowed and levelled down the earth at the bottom of each intermediate trench, sow with great advantage, dwarf haricots, short early Dutch carrots, turnips of different kinds, but particularly the Flat Early White or Red-necked, the Long White Des Vertus, the Yellow Scotch, the Violet-necked Turnip, very good, but only when it is young. We may also plant beet-roots, either for storage or the table, of which good crops may be obtained by watering them with liquid manure made with human excrement and a sufficient quantity of water, the same as to *purin*, if it is too strong. It is with this manure, the most fertilising of all, and with *purin*, spread by means of tons of watering, that such fine crops of all kinds are obtained, in the departments of the North particularly. It is to this same human manure, nearly the only one, with the urine employed by the Chinese, that that people owes the extraordinary fertility of

the soil, which yields more than three or four crops of different kinds in the year. The day in which the *purin* and human manure (fecal matters and urine) shall be intelligently employed in all the works of cultivation in France, the general production will increase (we cannot too often repeat it) in very considerable proportions, which the most competent men have estimated at one-third, or even one-half in excess of what our soil now yields.

26. Besides the very great advantages of early earthing up, which hastens the formation and development of the tubers, and leads to a more advanced maturation those of second formation—that is to say, developed upon the tuberiferous stems under the soil, the appearance of which it stimulates—it has that not less important one of admitting, as I have just stated, the production of an excellent intervening crop of alimentary plants. I cannot therefore too much recommend this process.

27. After this operation it is good, at the moment the plants are about to flower, to cut off with a reaping-hook the tops of the stems on which the flowers are developed, and afterwards the small balls that contain the seeds. The sap that they would have uselessly absorbed will be useful to the tubers.

28. We now come to the period at which the disease makes its appearance. In the plantations of autumn and February, executed under the conditions specified above, the disease, especially after two or three years of regeneration of the seed-tubers by a longer retention in the ground and by a more complete maturity of those which have produced them, has little or no action upon the crop, or even upon the exterior vegetation. In my culture some spots show themselves upon the leaves only; but neither those nor the stems decay. However, there are some varieties that are always attacked in their leaves, stalks, and tubers. There is therefore, as I have said long ago, great propriety in a comparative cultivation of several species or varieties, in order to preserve for seed those that succeed best, according also to the nature of the soil.

29. I have shown two methods of generally preventing the disease from reaching the tubers: that which is most applicable to small culture consists in strongly heaping the earth round each cluster of potatoes, towards the period when the disease appears; the other, applicable on a large scale, consists in cutting the stems level with the ground, with a very sharp reaping-hook, and earth-up afresh, beating the ridge strongly—not with the flat of the spade, which would be too tedious, and can be only practised on a small scale; but by passing a heavy roll over each ridge, or over two at once. However, the cutting down of the stems requires, as I have stated before, to be done at a proper time—that is, neither too soon nor too late. If too soon, it completely stops the development of the tubers at the time when they most increase in size. If too late, the disease has already reached the tubers, either directly, or in consequence of the infection of the parts of the stems above ground, which transmit downwards to the tubers to which they are attached an infected sap. The morbid influence penetrates the tubers as much by its eyes as by the perforations and injuries produced by insects. It is therefore necessary to cut the stalks only when we are certain they are themselves attacked. In all cases in which we have properly employed, and at a proper time, this double process of cutting off the stems and earthing up, we have obtained by it good results.

30. At the time of raising the crop, we notice upon a certain number of tubers diseased germs perfectly developed, and already sometimes even very small tubers. These potatoes, diseased but germinated, being replanted at the time, or preserved under ground up to the moment of planting, in order to avoid the decay of the germs and the hairy rootlets yield abundant and excellent products free from the disease. This proves, as I have stated, that the disease is not hereditary; the learned agriculturist, M. Joigneaux, having afterwards said that it was rash on my part to utter such an opinion. I have submitted to him, among others, the two following communications mentioned in my *brochure* of the 15th of March, 1854, in which I recorded the results of the inquiry opened by myself in 1853, into the potato disease.

Communication from General the Marquis Grouchy, Senator: "Some years since, upon one of my estates, in the department of the Allier, the greater part of a crop, almost entirely diseased, having been left on the ground, they vegetated beautifully in the spring, and a magnificent crop, of excellent

* This method of planting is exactly similar to that of the "Lazy-bed" system, long practised in Ireland, and with great success on their undrained lands.

quality, and exempt from the disease, was taken from that same field."

On the 22nd of January, 1853, M. Cartier, Minister of State, and formerly Prefect of Police, did me the honour of writing to me as follows:—"I have stated since 1840, that the potato-disease is not hereditary. I planted in that year, as an experiment, about ten acres (1,196 yards) of potatoes, chosen from the most diseased, all black, and having a most repulsive odour, and I had a magnificent crop without a single diseased tuber."

To these two statements I added, that I was glad to be able to publish these two most interesting letters, which helped to support my own experiments. I do not doubt the persons who have made, or will make, the trial that I have challenged

in my memoir, of October, 1853, did not obtain from the autumnal planting, from diseased tubers, results analogous to those of Messrs. Cartier and Grouchy, and my own, unless they were careful not to trust to the earth any tubers on which the commencement of germination had not appeared; for I have observed that all diseased potatoes have not preserved the power of germination.

It is my wish that this new publication may contribute to stimulate numerous trials of culture, following the process: I have pointed out with confidence after twenty years of innumerable researches and experiments.

VICTOR CHATEL,
Campanard-Valcongrain, Proprietary Agriculturist.
near Aunay-sur-Odon (Calvados).

SPRING TILLAGE.

At the February meeting of the Dorchester Farmers' Club, Mr. THOMAS CHICK, of Stratton, read the following paper:—"Under the head of spring tillages we may include the preparation of the land for spring corn, seeds, and roots; and this cannot be accomplished in a satisfactory manner without a sufficient number of good and efficient implements, according to the kind and quality of land to be cultivated. In preparing the land for spring wheat, which generally follows a root-crop, one ploughing is generally given, and the wheat either sown or drilled as soon as the weather permits. Early sowing is to be preferred; and, as a rule, none excepting the April wheat should be sown later than the end of February or beginning of March. Barley is in this neighbourhood the most important spring-corn crop; and upon many farms the acreage of barley exceeds even that of wheat. It is mostly grown after a root-crop, although some is grown after wheat, and a little after a grass-layer or clover-ley. Barley flourishes best in free-working soils. This arises from the natural habit of growth in the barley, which requires a considerable freedom of action for the development of that bunch of fibres of which its root consists. This has to be remembered in preparing the land for its growth; for, if the character of the soil is not naturally of the description required, we must adopt measures for rendering it as much so as possible. The mode of procedure will of course depend on the nature and quality of the land. Upon our lightest barley soils, one ploughing will generally be found sufficient. Soils, however, that have only a moderately adhesive character, sometimes become considerably hardened by the treading of sheep in feeding off the roots; and the hardness is often increased by the drying action of the sun and air at the latter end of the season. As soon as the ground is clear of sheep, it should be ploughed up; and if in any way disposed to bake, it should be either rolled or harrowed immediately afterwards. It should remain in this state until the time for sowing approaches, and then be ploughed a second time. If this does not bring the soil into a sufficiently free working condition, the use of the roller and drag will be required. If the second ploughing is preceded by the use of the drag, it will materially favour the work; and this should certainly be done if the soil promises to give trouble; for, in this way, we shall find, after the succeeding ploughing, that the bottom portion of the surface-soil will have lost much of its firmness. In this or some similar manner, the soil must be reduced to a free working condition, ready for the seed, for it is the worst of policy to sow barley upon a badly-worked soil. In the busy time of spring-sowing one is sometimes tempted to sow barley quickly, and dispense with extra tillage when the soil appears to be in a fair condition; but I have seen that it is unwise to lessen the tillage by being in too much of a hurry, as the superior condition given by a second ploughing and additional tillage makes a very material difference in the crop. The time thus lost in the sowing of the land is soon regained by the more rapid growth of the young plant, which is often observed to maintain the vigour of its early and prosperous career unabated up to the time of harvest. When a strong soil has to be prepared for barley the land should be ploughed as early as possible, so as to secure the action of frost, should there be any. If the soil gets thoroughly frozen, the after-

working of the land becomes comparatively easy, provided reasonable care is taken in selecting the proper time for cross ploughing and working the land for the seed. On the other hand, should land of this description be ploughed up in a close condition, so as to be smeared by the turn-furrow, and, instead of getting any frost upon it afterwards, becomes hardened by exposure, it then requires a vast amount of labour in the shape of rolling, dragging, and ploughing, before it can be reduced to a fair state for sowing, and, after all, does not afford a satisfactory seed-bed for the barley. The best qualities of barley, as well as the largest crops, are produced from soils free and open in their character; and these indicate the condition to which we should endeavour to bring any soil upon which this crop is to be sown. Upon our lightest soils I prefer drilling the seed; but, on those that are moderately strong, I consider sowing broadcast to be quite as well, if not better, because thus there is less compression of the soil, and a larger breadth can be quickly sown, just when the land is in the best condition to receive it. The usual quantity of seed sown is about three bushels per acre; but upon poor soils as much as four bushels may be sown with advantage. The time of sowing may be stated as including the latter half of the month of March and the whole of the month of April, in some cases commencing earlier, and in others being prolonged beyond that period, the early-sown barley being generally of the best quality, as well as the greatest quantity. The condition in which the land is to be left after sowing in some measure depends upon the time of performing that operation. When the barley is put in early, the land may be well harrowed, and left without rolling; but as the later sowings are generally accompanied by the cloverseed, these are harrowed and rolled to a fine surface. The object in leaving the soil unrolled is to prevent the surface from running together after rain; and it also gives a slight covering for the cloverseed to be sown after the barley is up. Oats are generally sown either after oats, or else upon a fresh broken grass or clover-ley. The natural energy of the root of the oat is much greater than that of barley. This circumstance has a great influence upon the preparation which is desirable. When oats are to be sown after roots, the ground is usually ploughed once, and time given to the surface to become mellow under the action of frost before sowing. In ploughing grass or clover-ley for oats, the skim-coulters should be used, so as to favour the entire covering of the grass; the ground may then be left until the seed-time comes. During this interval, frosts are almost certain to have crumbled the surface, and produced a nice light mould for the seed. Such land will then present the most desirable seed-bed for oats, a soil well charged with vegetable matter, firm beneath, yet easy of penetration for the rooting of the plant, with a surface light and free in its character for the germination of the seed. This firmness of land for the root must be distinguished from the hardness with which wheat will contend after it has made a fair growth. The sowing of oats commences in February; but the bulk is sown in March. As a rule, early sowing is the best, especially after a grass or clover-ley. The great objection is the influence of frost, which frequently gives a bluish tint to the blade, but, if the land is in fair condition, will not materially injure the crop. Drilling the seed

may be considered the best plan on very light, dry soils; but it often happens on moderately heavy as well as stronger soils, that the ground will harrow well when it is not dry enough for drilling; and, with the uncertainty of weather, waiting for the drill frequently involves a considerable loss of time; and thus much may be sown broadcast, even where the drill would in some respects be preferable. The use of the roller depends much on circumstances. If the ground has been ploughed late, and is not in a favourable condition, the roller will be employed to reduce it to a fine tilth; but this will precede the sowing. As a general rule, and especially in the case of early sowings, the ground is better not rolled down smooth after the seed is deposited, but should be left rough from the harrow. This roughness will be attended with a double advantage; for it will protect the plant from the severity of the cold winds; and, by the time these are past and the oats are ready for rolling, these rough portions of the soil will be nicely mellowed, so that the crop will then be improved by the fresh soil, as well as by the pressure. The quantity of seed will vary according to local requirements. Generally, about four or five bushels to the acre is sown; and when there is a tendency to produce straw, a thick seeding favours the yield of corn. The cultivation of peas is seldom practised as part of any regular rotation of crops; and they must rather be considered as a catch crop. The preparation will necessarily vary in detail according to the preceding crop. The pea requires a free and loose soil for its successful growth; and it is upon soils of this description that it is chiefly cultivated. The seed-bed best suited for peas may, therefore, be described as a deeply-worked and well-cultivated soil, fine in texture, loose, and free. The seed should, therefore, be sown when it is dry, so as not to prejudice the condition of the land. Drilling is, beyond question, the best mode of depositing the seed, so as to allow of cultivation between the rows during growth. The plan of double rows, nine or ten inches apart, with an interval of eighteen or twenty inches between them, is advisable, because of the greater facility for cleaning the land, and the greater support which the peas gain from the neighbouring row. The early sowings may be commenced in February, upon dry soils, and be continued up to the middle or end of March, by which time the seed should be all in the ground. The various kinds of clover-seeds are small in size, and proportionally weak in their powers of growth, for which reason they require the greater care, to secure their healthy germination: a depth and condition of soil which may be suitable for larger and more vigorous seeds is really destructive to their growth. Seeds of this class should be laid as near the surface as possible, so that the covering of the soil shall be of the thinnest character. A slight covering, however, is desirable for the purpose of retaining moisture, for seed placed upon the surface is naturally subject to the drying influence of the air, which, after germination has commenced, may so check the growth as to prove destructive to its existence. As these seeds are usually sown with a corn crop, the early preparation of the ground is carried on without regard to their special requirements. They are sometimes sown immediately after the corn is in the ground, and the land has been well harrowed; but, unless in the case of a late sowing, this plan is objectionable, because they then sprout and show their tender leaves above the ground too soon, being exposed to injury by the cold nights; also because the ground is then in too loose a condition to secure the seed from sinking too deeply into the soil. If the soil has been worked to a very fine condition, and is then rolled, the seed may be sown without much loss; a cross rolling, or the small seed harrows once, being sufficient to cover it when sown. An extra rolling, however, in case of much rain, might be very prejudicial to the growth of the seed corn. As a general rule it will be better for the small clover seeds to be sown after the corn is well rooted in the ground; the soil will then become more settled, and there will be less disposition to allow these small seeds to sink between the particles of soil beyond their proper depth. If the surface is at all crusted over, a very light harrowing should first be given; after this the seed may be sown, and then rolled down. Should the surface be free and slightly rough, so as to crumble readily beneath the pressure of the foot, the seed may be sown without previous working, and then rolled in; but in case the surface is judged to be too rough for this treatment, it must be rolled lightly, harrowed if necessary, and again rolled after the seeds are sown. A careful use of the roller is generally

the best means of covering the small clover seeds; but it must always be done whilst the ground is dry and works freely. Another great advantage gained by sowing after the corn is up is the shelter and protection given to the seeds, and also to the young plants. A moderate degree of firmness in the soil beneath the seed is not objectionable, as the roots are powerful in piercing the soil, and a sufficient degree of freedom is usually possessed by land sown with spring corn. The best time for sowing the perennial rye-grass is perhaps before the last harrowing after the spring corn is sown, as it requires a deeper covering of soil than the clover seeds. It is impossible to be too careful in selecting seeds that are both clean and genuine, for the loss entailed by sowing foul seeds is incalculable. Rye-grass has very often a mixture of what is commonly called "lop-grass," besides other creeping grasses, which are some of the worst weeds we have to contend with. The practice in preparing land for turnips and swedes is various, still it agrees as to the condition of soil to be attained. Upon soils which are naturally strong and adhesive by good cultivation and manure luxuriant crops are grown; but the great point to be secured is that fineness and looseness in the condition of the soil which enables the roots of the plants to gather nourishment and make their growth. By ploughing the stronger class of soils before winter so as to get the benefit of frost, and by active tillage in the spring of the year when the weather is favourable, these necessary conditions are secured. The lighter classes of soils are brought into a proper mechanical condition with much less difficulty, so that, instead of the preparation having to be commenced before winter, it is very often found desirable to grow a crop of spring feed upon the land, in the expectation that, after it has been consumed, one or two ploughings will prove sufficient for the turnip crop. This practice prevails to a great extent in this neighbourhood, and is a very excellent one, inasmuch as more sheep can be well and profitably kept, as well as the good their manure does to the land when folding off the spring feed, and more especially if they fed with corn or cake at the same time. It is a good plan to prepare the land as if for being sown eight or ten days in advance, so that the seeds of any weeds may make a growth and be destroyed when the surface is moved in the sowing of the turnip seed, and it also preserves the moisture in the soil, which upon light land in dry seasons is of the greatest importance. The drill is the best implement for turnip sowing, not only on account of depositing the manure, but also to enable the horse-hoe to be used freely. If a heavy crop of roots be desired, the rows should be from sixteen to eighteen inches apart, for, should they be wider, the increased size of the roots will not make up in weight for the increased number, and a well-grown root of a medium size is always better in quality. The time of sowing should be regulated according to the time required for feeding. Mangold wurtzel is better adapted for strong soils than for those of a light chalky character; the best preparation for this root is perhaps a good piece of swedes, fed off; the land is then in good condition, and, with a little care in working, may soon be brought into a fit state to receive seed. Early sowing is of importance for this crop; the usual season is from the middle of April to the middle of May, and for a heavy crop we must not trust to a late sowing. The growth of the seed may be promoted by steeping it in water some hours before it is planted. This will soften the skin and render germination more rapid. The seed may either be dibbled by hand or drilled; if by the latter mode, the quantity should not be less than from 6lb. to 8lb. per acre, the young plants being seldom, if ever, too thick in the rows. Too much care cannot be taken in sowing both turnip and mangold wurtzel seed grown from roots that have been selected for their good shape and quality; for, although they may not always be the largest roots, yet they will produce the greatest weight per acre, as they can be grown closer together in the row. Transplanting and selecting roots is, when properly conducted, an expensive process, and the conscientious grower cannot compete in price with the man who sows a coarse, hardy kind over his stubbles, leaves them to flower in the next summer, and then harvests in a slovenly manner a mixture of charlock, rape, and turnip seed. Moreover as varieties are improved, the quantity of seed which they yield decreases, such improvement consisting in an enlargement of the bulb and a diminution of the leaf and stalk—a further reason why the grower of improved varieties can never compete in price; but may be a

lower even when charging double the price at which the careless grower makes his large profit. I will now leave the discussion of the subject in your hands.

The VICE-PRESIDENT said the Club was deeply indebted to Mr. Chick for the careful and able manner in which he had brought before them the various operations connected with spring tillage, and he (Mr. Genge) thought they might all derive considerable profit if they attended to the many useful hints which Mr. Chick had thrown out. For his own part, he thought the season for early sowing could hardly be taken from the almanac, as they must be guided very much by the state of the soil they occupied; and it was, as Mr. Chick had observed, incumbent upon them fully to consider the state of the soil before sowing their crops, as by hurrying in the seed very often they sacrificed seeds per acre. He agreed with Mr. Chick in the remarks he had made respecting the sowing of clover seeds. A great deal of damage was frequently done by putting in the seeds carelessly, as often the seeds were sown too deep, and perhaps the harrow went a little too low down, in which case many of the seeds never came up, and the seller of the seed was often blamed for vending a bad article. Mr. Chick had omitted to speak of a very important operation in connection with spring tillage; he alluded to autumn cultivation; but that, perhaps, might be considered a subject of itself, though intimately connected with the one now under consideration, especially as regarded the root crop. Preparation for the root crop should be made as early as possible after harvest, as then the land could be most easily and effectually cleansed. The lecturer had alluded briefly to the use of implements, which had been greatly improved during the last twenty years, and he spoke most favourably of Bentall's broad share, which he thought all who used it must find very useful. There was an implement for paring stubbles, which he had found superior and more effective than the one he had mentioned; and it was simply a broad share, about 14in. in width, made to fit on a common iron plough. If the ground was hard, Bentall's share frequently slipped out, and the work was only half done; but a pair of horses would perform a good deal of work in a day with the 14in. share, and they could plough the land thoroughly well to the depth of about three inches. He had used it for a year or two, and was exceedingly pleased with it; inasmuch that he had scarcely ever employed Bentall's since. The implement to which he had alluded was especially useful at this season of the year, when they had been feeding off turnips and the ground was trodden hard, as it turned up the land and prevented the manure from running away. It was very desirable to stir the soil as soon as possible after the sheep were turned off, so as to prevent the evaporation of the manure, or its being washed away by the rain. He wished particularly to mention these shares, because he was extremely pleased with them: Mr. Galpin made them to fit his iron ploughs, and all who tried them would find them most useful.

Mr. HELLIER inquired if the turn furrow was used with them?

Mr. GENGE replied: Yes; the turn furrow had the effect of turning over the land like a rafter.

Mr. HELLIER thought that for paring it would be better without the turn furrow.

Mr. H. TAYLOR agreed with the latter remark of Mr. Hellier's.

Mr. HELLIER, on being called upon, said the cultivation of the soil in Somerset differed widely from the plan pursued in Dorsetshire, and spring crops were not so much an important consideration with the farmers as in that county. Great attention was paid in the neighbourhood in which he resided to root-crops, but very little was done in the cultivation of barleys. Wheats were sown up to within the first and second weeks in March; but as a rule very little April wheat was sown in his neighbourhood. They had a new kind of wheat called Hancock wheat, which they found answered their purpose very well. That was sown up to the end of March; but, as Mr. Genge had said with regard to spring-tillage, they in Somerset did a great part of their preparation for the root-crops as early after harvest as they possibly could, as it materially economized labour. Their heavy clay lands for roots were for the most part cultivated early in the winter. For instance, the mangold wurtzel crops were grown on heavy clays, where swedes could not be grown to advantage; and these lands were invariably manured in the autumn, and ploughed

up as early as the present time of year. The land was not ploughed again after this, but all the subsequent cultivation was done by the scarifier. The greatest part of the clay lands were worked in eight-furrow ridges of about seven feet in width, and the manure was put in as early in the season as convenient. The best preparation for mangold wurtzel and vetches was after swedes fell off. That was the general method of cultivation practised in his neighbourhood (Dorset); instead of growing a late piece of wheat or barley, they grew their heavy weights of mangold wurtzel in that way. The last crop of mangold he had grown was with green vetches ploughed in. He tried this experiment side by side with a piece on which his swedes had been fed off and which had been manured highly, and where the vetches had been found the greater crop of mangold. This plan was, however, seldom followed, as vetches were too often required for sheep feed; but last year the price was so low that instead of selling his vetches he used them in the way he had described for manure. They depended upon mangold wurtzel more especially as their most important crop, and very few wheats were sown; therefore spring tillage was not a matter of so much moment with them. He had been an extensive seed-grower for the last ten years, and some of his friends in this part of the country had had an opportunity of testing his productions. He set to some expense in seed-growing, and most seeds were selected from large and well-grown roots, and not the small specimens which were grown for sale in the London markets. The best means of cultivating clover leys was to grow a good bean crop; but the wheat grown this year in Somerset on clover leys had been a total failure. They found the best way of growing beans was with the clover ley, and thus the ground is easily brought into preparation for wheat. The growth of beans, however, was not much in his neighbourhood, and he reminded his hearers that he did not reside near Martock. Beans were not so profitable a crop as some years ago, and farmers generally had had to look with them of late. Last year they were utterly worthless, and there was not one piece in twenty worth saving. Now-a-days not so many beans were grown as formerly, and they had given way in favour of roots.

The CHAIRMAN observed that his experience had extended over a larger period probably than Mr. Chick's, and there were one or two points in his address that had not been fully explained. Mr. Chick had recommended a second ploughing after the root crop; but in his experience on stone break and chalky soils he had been in the habit of ploughing only once for barley, and he thought it was preferable to do so. He had invariably found that if he ploughed his root ground at this time of the year a second ploughing produced more straw; but still in a great measure the crop generally was not benefited. The land ought to be ploughed early after the sheep had left it, in order to retain the manure. He found the best cultivation for barley, as regarded quality and cropping, was only to plough once, and instead of sowing it with the drill, he preferred to finish the work by means of the scarifier. The land was thus lifted as much as by the plough, and the barley straw was much stiffer, and the crop of better quality. He had tried this plan for ten years, scarifying it in broadcast, merely dragging and harrowing down the surface; by this means the barley was sown deep, and a better crop was produced than by sowing by means of the drill. The reason why drilling barley was not so advantageous as sowing it broadcast was that often in the former method the seed was sown too close together. It looked well at first, and came up a week or ten days earlier perhaps than the broadcast; but if they tried the two plans in equal proportion, they would find at harvest time that the latter would be better in quantity and quality. With regard to oats on light land, Mr. Chick had said the land was only ploughed once; and there could be no question that the drill must be used. But they must take great care to get the land thoroughly firm in cultivation, both by harrowing and dragging, before the oats were sown. All light lands required to be made as firm for oats as for wheat; and if they could not accomplish this with the sheep, they could use the presser, and he had then no objection to the use of the drill. He could not explain, however, why oats would crop better by drilling than barley; but he found from experience that they might drill oats in turnip lands with great benefit than barley. He then proceeded to speak of seeds, which was a question in which they had for many years found. His opinion, founded on experience, was that clover seeds, and re-

pecially red clovers, should never be sown on the same land more than once in eight years. Generally speaking, when they did so once in four years a failure ensued. To show why the land should be hard before the clovers were put in, he might state that if it was put into wheat land that was sown in the autumn after turnips there was scarcely ever a failure in the crop, whereas it frequently happened that only a limited crop followed their sowing the clovers too deep, especially in light soils. The year before last he had ten acres of land in which he did not intend to sow clover at all, as it was not in his opinion quite in condition for the purpose. But finding, at the end the season, that he had about one cwt. of seed more than he required for the land he had intended to sow, he told his men to put this into the ten acres to which he had alluded. The result was that in that field he had a better crop of clover than he remembered ever to have seen, though it was sown after the barley was above ground. In some cases it was wise to sow clover soon after barley; but his experience taught him that in the majority of instances he thought it was more prudent to sow it in stale land.

Mr. T. CHICK, in his reply to the remarks of the various speakers, said he had purposely avoided touching upon the subject of autumn cultivation, which no doubt was the founda-

tion of all good farming, as he considered it was a subject which might receive the undivided attention of the club at some future meeting. His reason for not treating of the culture of beans was that he was unacquainted with the subject sufficiently to throw any new light upon it. The president had made some remarks upon barley sowing. No doubt in drilling barley it was sometimes sown too thick, and he had known some first-class crops grown after $2\frac{1}{2}$ bushels per acre, and then even seemed too thick and heavy. Mr. Chapman Saunders said his plan at Watercombe was to drill one-half the seed and to sow the remainder broadcast. No doubt this was a very good plan. Last year the first piece of barley he put in he began drilling, but by some mistake only one wheel was put on, and $1\frac{1}{2}$ acre was sown before it was discovered. He then sent back the cart to sow the other broadcast, and at harvest-time he could see no difference between this part and that on which the drill had been in full operation. Perhaps on some soils an improvement might have been perceptible; but different soils required different management. He agreed with the president in allowing eight years to elapse before sowing red clover crops on the same land.

The thanks of the club were accorded to Mr. Chick, and the proceedings terminated.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL, Wednesday, April 1, 1868.—Present, the Duke of Richmond, K.G., President, in the chair; the Duke of Devonshire, K.G.; Lord Berners; Lord Bridport; Lord Chesham; Lord Tredegar; Lord Walsingham; Sir J. Johnstone, Bart., M.P.; Sir Massey Lopes, Bart., M.P.; Sir A. K. Macdonald, Bart.; Sir Thomas Western, Bart., M.P.; Mr. Amos; Mr. Baldwin; Mr. Barthropp; Mr. Bowly; Mr. Cantrell; Col. Challoner; Mr. Claydon; Mr. Davies; Mr. Dent, M.P.; Mr. Drace; Mr. Edmonds; Mr. Brandreth Gibbs; Mr. Wren Hookings; Mr. Hornsby; Col. Kingscote, M.P.; Mr. Milward; Mr. Randall; Mr. R. C. Ransome; Mr. Sanday; Mr. Stone; Mr. Thompson; Mr. Torr; Mr. Webb; Mr. Wells; Mr. Jacob Wilson; Mr. Frere; and Dr. Voelcker.

The following new members were elected:
 Burley, William, Rutland-street, Leicester.
 Caborn, Richard S., Denton, Grantham.
 Carver, Robert, Ingarby, Leicester.
 Doggett, Arthur, Newnham, Baldock.
 Griffiths, John Harward, The Weir, Hereford.
 Hassall, Joseph, Great Wigton, Leicester.
 Hodgson, H. Tytton, Harpenden, St. Alban's.
 Knight, E. W., Newton Harcourt, Leicester.
 Larking, J. Wingfield, The Fir, Lee, Kent.
 Larkman, George J., Fritton, Lowestoft.
 Manley, Robert G., Upton House, Kington.
 Plant, Edward, Little Oan, Stafford.
 Porter, Timothy, Swinford, Rugby.
 Robinson, Alfred, Leicester.
 Sample, Thomas, Matten, Newcastle-on-Tyne.
 Sheraton, William, Broom House, Eilemsere.
 Sidley, C. Morton, Leicester.
 Skead, Joseph, Calder Farm, Calder Bridge, Whitehaven.
 Smith, R. Baraley, Tynewydd, Bangor.
 Swann, John, Odstone Hill, Atherstone.
 Thomas, Alfred J., Llanwarne, Ross.
 Woodcock, Henry C., Bearsby, Leicester.
 Woolley, Joseph, Allestree, Derby.

FINANCES.—Colonel Kingscote, M.P., presented the report, from which it appeared that the Secretary's receipts during the past month had been examined, and were found correct. The balance in the hands of the bankers on March 31 was £1,916 0s. 9d., £2,000 remaining on deposit at interest. The balance-sheet for the quarter ended March 31, 1868, and the statement of subscriptions and arrears were laid on the table, the amount of arrears due being £732.

JOURNAL.—Mr. Thompson, chairman, reported that

the *Journal* has been unavoidably delayed in consequence of the serious illness of the editor.

LEICESTER MEETING.—Mr. Thompson, chairman, reported that the committee had ordered the insertion of the usual advertisements for tenders for refreshments in the show-yard; they recommended that a sum of £50 be assigned for bill-posting in the district. An application to exhibit specimens of English woods was granted, the applicant to have space in the shed appropriated to models. This report was adopted. On the motion of Mr. Bowly, Mr. Davies was unanimously elected a steward of live-stock.

COUNTRY MEETING OF 1869.—Memorials, with plans, signed by the mayors and town clerks of Lancaster, Liverpool, Manchester, and Preston, were presented, soliciting the Council to hold the Society's Country Meeting at those places in the year 1869; and Mr. Thompson having moved that—1. The committee consist of five members of Council; 2. That of these five the chairman of the Country Meeting Committee shall be one, and, if unable to attend, a substitute shall be named by and from that committee; 3. That one of the stewards or ex-stewards of stock, and one of the stewards or ex-stewards of implements, and the honorary director shall be members of the committee; 4. That the fifth member shall be named by the Council; which was carried; a committee, consisting of Mr. Brandreth Gibbs, Sir Archibald Macdonald, Mr. Milward, Mr. Randall, and Mr. Thompson, was appointed to inspect the various sites offered for the show-yard and trial-fields, and to report to the Council on May 6th.

It was resolved that the four competing towns be informed that the Society's Country Meeting for 1869 will be held either at Liverpool, Manchester, or Preston.

Mr. Dent, M.P., having moved that the secretary shall forward a copy of the draft half-yearly report to each member of Council with the agenda-paper for the May and December Councils, the same was carried.

The Council having granted the secretary leave of absence for a week at Easter, adjourned to the 22nd inst.

A deputation from the Council, consisting of Lord Walsingham, Lord Bridport, Lord Chesham, Colonel Kingscote, M.P., Mr. Randall, Mr. Torr, and Mr. H. Hall Dars (secretary), waited upon the Prince of Wales at Marlborough House, with the request that his Royal Highness would act as President of the Society during the ensuing year, to which the Prince graciously acceded. The Duke of Richmond (president) was prevented from accompanying the deputation by a Cabinet Council.

THE FOOT-ROT IN SHEEP.

PRIZE REPORT.

By HUGH BORTHWICK, Shepherd, Middlestead, Selkirk.

Foot-rot is a disease prevailing to a greater or less extent over most of the pastoral districts of Scotland. On hill pasture it is always confined to what is termed soft or grassy land. On hard heathery pasture it is never known to exist. On arable land it appears on young grass, if very rich and luxuriant; but upon rich old pastures and lawns the disease prevails to a great extent. This fact is particularly exemplified in gentlemen's home farms, where the parks have been long in pasture, partly owing to the land being in better heart, as it is termed, and, generally speaking, from being lighter stocked, and surrounded with trees and plantations, so that the grasses rush up more luxuriantly, and are of a soft, watery nature. We don't know of a more fruitful nursery for the propagation of foot-rot than in some gentlemen's approaches, thickly planted with trees. Foot-rot is always confined to the foot, and although not fatal if properly treated, still there is no disease to which sheep are subject so difficult to eradicate, and so annoying to stock and the stock-farmer, if allowed to establish itself throughout a flock. Emaciation and poverty are the natural consequences, causing a great loss to the owner. It is one of the most essential points in stock-farming to keep the sheep in good condition; but if foot-rot is allowed to establish itself throughout a flock, this is impossible, let them be ever so liberally fed.

Symptoms.—The first indication of the disease is a certain degree of lameness in one or sometimes more of the feet; generally the fore feet are most liable to be affected. As the disease advances, the lameness increases, if the animals are not treated or removed to other pasture. Ultimately they become totally unable to put the affected feet to the ground, but crawl about on their knees, pining away to skin and bone, and presenting a very distressing spectacle. It is not easy to say what part of the foot is most liable to be first affected; but there is a difference between sheep grazing on the hill pasture and on old arable pasture. On the former the disease is generally confined to sheep two years old and upwards, old ewes being most liable to it; whereas upon arable or old grass parks we have seen whole flocks seriously affected and deteriorated in value. Upon hill pasture, if the animal is caught in the first stage of the disease and examined, by putting the finger between the hoof, the foot is found to be unusually hot, and generally a little enlarged. The crust or horn along the outside of the foot and near the toe is found either to lap over the sole, or part of it is broken away and separated from the hoof, in which particles of earth or filth are accumulated; consequently inflammation ensues and progresses rapidly. As the disease increases, ulcers are formed, which separate the hoof more and more, discharging a thin fetid matter, emitting a strong smell; and by degrees the foot becomes a total mass of ulcers and proud flesh. In other cases the disease breaks out in the inside of the toe, and progresses beneath the horn around the outside of the foot; and sometimes the heel is first affected. In parks where the pasture is soft and rank, the disease assumes the same appearance in old sheep as upon hill-pasture; but in hogs and lambs it generally commences between the hoofs, near the heel, the crust or horn being comparatively sound. In these cases, when the animal is caught and examined in the first stage of the disease, the skin presents a red and tender appearance, and has much the same aspect as what is termed "scald" in the young child. As the disease advances, the flesh becomes putrefied, and a thick, adhesive matter accumulates. By degrees the malady extends round the heel beneath the horn, till the whole foot is affected; and if allowed to run its course for a length of time, a cure is seldom effected till the whole crust is taken off on the side of the foot affected. In such cases, if the disease is not checked and energetically treated, it spreads rapidly through a flock of lambs; and very often the whole four feet are attacked at the same time.

Causes.—It is evident to the practical stockman that the cause of foot-rot in sheep is attributable to the soil and pasture. For example, we have never known a case occur on the hard, mountainous districts of Peeblesshire, Selkirkshire, or Argyleshire; but on very soft, grassy land it abounds, in every county that we are acquainted with. It prevails to a great extent among the flocks in the fine grassy pastoral ranges of Roxburghshire and Dumfriesshire; and even on some rich pasture farms in Peeblesshire it exists to a greater or less extent; whereas upon hard, heathery farms, lying contiguous, it is unknown, although the sheep are daily inter-mixing. Certain seasons have great influence in propagating the disease. For instance, the wet summer of 1882 was noted for its prevalence. In no former year do we remember it having been so general, breaking out, as it did, on some farms where it was never known to exist before. Again, some persons of practical experience maintain that it is always worst in a dry season; and, in support of this theory, they point to the fact that diseased sheep are always more lame on a dry day. There is, no doubt, some truth in the statement; but it can easily be accounted for on a common-sense view of the case. When the foot is diseased and tender, the animal sets it more freely to the ground when the pasture is moist and soft. This, however, is only temporary relief; the pain is assuaged, but the disease is aggravated. This fact may easily be ascertained by any one who practically comes into contact with foot-rot. A lot of sheep affected with the disease appear all very lame on a dry day. Should rain begin to fall, they become apparently a good deal better; but let them be caught and examined, and it will be seen that the disease is progressing; or let a dry day recur, and the lameness returns in a more aggravated form. There are, no doubt, farms so situated that the growth of grass is most luxuriant in dry season; and in some such exceptional cases foot-rot may then prevail to a greater degree.

Foot-rot is generally most prevalent in the months of July, August, September, and October—in fact, it may be said to commence when vegetation arrives at a certain stage, and gradually declines, if properly treated and kept under, as vegetation decays; but if allowed to gain head in a herd of sheep, it will prevail throughout the most barren months. No variety of weather will totally eradicate it; and we have seen it to a great extent, in November and December, in rich old parks which had been lightly stocked during the summer.

It is not easy to say what breed of sheep is most liable to foot-rot; but it is clear that both Cheviot and Blackfaced, taken from hill-pasture and put in parks in the back-end of the year, when the pasture has a tendency to propagate the disease, are far more susceptible to it than park-bred Leicesters, on the same pasture and exposed to the same circumstances. We have seen instances of lots of both Cheviot and Blackfaced ewes, taken from hill-pasture totally free of the disease, and put into grass-parks; and in the course of a month almost every sheep was more or less affected; and, although Leicester ewes had been grazing in the same parks all summer, they were not so liable to the disease, nor affected to as great an extent, and were more susceptible of cure. Nevertheless, although Cheviot and Blackfaced sheep are more liable to foot-rot of a certain kind than Leicesters, when it breaks out below the horn or crust, it is clear that Leicester lambs are as liable to the disease as any other breed—that is, when the malady breaks out between the hoofs, and when the skin in the first stage appears a little red and tender, and as the disease advances discharges a thick, adhesive matter. These facts appear a little contradictory; but we state them from our own personal observation, and cannot venture to give any scientific solution of the two cases. We have, however, never seen lambs affected to any extent with foot-rot on hill-pasture; but in rich old grass-parks we have seen whole flocks of lambs seriously deteriorated, especially in

wet weather. Conflicting opinions exist among scientific men, stockowners, and shepherds of practical experience and observation, as to the infectious nature of the disease; and there is no doubt the preponderance of evidence is on the side of infection. Judging, however, from our own observation, we are inclined to believe the contrary, and will state a few facts that have come under our own eye. We have already said there are some rich pastoral farms in Peeblesshire where foot-rot prevails annually, and where hard heathery stock-farms lie contiguous, the sheep always intermixing, and yet a case of foot-rot never occurs on the latter. Again, on a hard heathery stock-farm on which I acted as shepherd for some time, four of the rams got unmanageable during close time, and were shut up in a small enclosure surrounded with a high wall; the ground was soft and potchy, and they all became seriously affected with foot-rot, and a cure could not be effected whilst in that situation. They were turned out to serve the ewes on the hill at Martinmas, very lame, and greatly reduced in condition, but not a single sheep was affected on the hill; and when the rams were taken in, they were quite sound, though no treatment was employed, except that on the day they were turned out to the hill the loose crust was all cut pointedly off, and the diseased parts of the hoof anointed with the butter of antimony. It should be observed that the rams did not catch the disease from infection, as foot-rot was never known to exist on the farm before. The cause was my own mismanagement in confining them in a small, wet, potchy enclosure. On the same farm in a following year the rams got unmanageable in the month of October, and could not be confined from want of proper fences. Pasture was taken for them in an old grass park, the home farm of a gentleman, a few miles distant. In the course of two weeks the whole lot, eight in number, became seriously affected with foot-rot. They were brought home very lame, and turned to serve the ewes at Martinmas. Not a single sheep caught the infection on the hill; and again the rams, when brought in, were all nearly recovered. I could multiply instances of a similar nature to prove that sheep are not so liable to be infected with foot-rot, at least on what is termed dry hard land, as some writers would lead one to believe. But I think these few facts are sufficient. They also prove that nothing is more essential in effecting a cure than a change to dry hard pasture. It is however argued on the other hand by the advocates of infection that an experiment on hard land, such as described, is not a fair criterion, as sheep are not liable to be affected with foot-rot on such soil; but, on the other hand, we don't know how a trial of the infectiousness of the disease could be made on soft grassy land where foot-rot usually abounds, as it would be difficult to determine whether the disease proceeded from infection or from the natural exciting causes of the pasture and soil. One fact, however, has struck me regarding pasture subject to foot-rot, and it is certainly in favour of non-infection. I have often seen both the fore feet of sheep seriously affected and in the very worst stages of the disease, and the hind feet remain quite sound and healthy. Certainly a more favourable experiment could not be devised for infection, with the exception of inoculation with the knife.

Treatment.—It will be observed from the facts already stated, that foot-rot attacks in two different ways—the one being peculiar to old sheep, when the disease breaks out below the crust, and the lambs are more liable to be attacked between the hoofs; and as the treatment we have had recourse to is different, we will relate our own experience and observation with old sheep when the disease breaks out below the crust or horn. The great essential before attempting a cure, is to have a small park to keep the infected sheep separate from the rest of the flock, as it is seldom a cure can be effected with the first dressing, and it is a great annoyance to a flock of sheep to separate the diseased at every application they require. The most dry and hard position on the farm ought to be selected.

Whenever the animal is observed to halt in the slightest degree, it ought to be taken into the park, caught, and examined, and all the loose crust that is separated from the hoof cut off, care being taken not to draw blood. The foot, especially the diseased part, ought to be well cleaned with a coarse cloth; afterwards, the diseased part ought to be anointed with the butter of antimony, and as much put on as the sore absorbs. The animal must be held on its rump for a few minutes till the application takes effect, which is easily known by the proud flesh or ulcers assuming a colour something akin

to toasted cheese. After the liquid appears to have done its work and assumes a dry appearance, the animal may be let on to its feet and put on to the park. Two days ought to elapse before it is again interfered with, when it should be again examined, even although it may be apparently better, as there is some danger of the disease progressing below the crust, or of the proud flesh not being sufficiently burnt down. If the crust still appears to separate from the hoof, the knife must again be applied, followed by the butter of antimony, and the animal returned to the park, and examined again on the second or third day, and the same treatment had recourse to till a cure is effected, when it may rejoin the rest of the flock. The generality of cases, if caught in the first stage, will yield to the second dressing; but if the disease is allowed to run its course for some time, it may require four or five applications before a cure can be effected. The disease, however, will ultimately yield if treatment is persisted in, except in the case of rams in close time. The grand secret of success in treating foot-rot, as in many other diseases, lies in combating it in the first stage. It is highly reprehensible, besides cruel, to allow the poor animal to go limping about, or sometimes crawling on its knees, for days and even weeks, till the foot is a total mass of ulcers and proud-flesh, and the carcass reduced to such a state of emaciation that it cannot regain condition during the same season. When dressing foot-rot, a dry day ought always to be selected if possible, as the application is likely not to have the same effect when the animal is turned at once to damp, wet pasture. Small quantities of the butter of antimony for present use ought to be kept in a bottle, as the liquid readily loses strength, and in all cases the bottle ought to be closely corked up when not in use. I have seen many applications had recourse to for the cure of foot-rot, and even patronised by persons of practical experience; but I know none equal to butter of antimony when the disease breaks out below the crust. I have had many opportunities of testing this mode of treatment while acting as shepherd in various districts; and, as I have already said, the disease abounds in gentlemen's home-farms where the pasture is old and rich. I will relate the following fact, which occurred when I was with Mr. Kenneth Scoon, Castleton, Mid-Lothian, who at that time rented the parks on the home-farm of Arniston; some of them had lain long in pasture, and were very liable to foot-rot. Mr. Scoon at that time drafted his blackfaced old ewes from the pastoral farm of Dewar, in the month of October, and grazed them at Arniston all winter, and sold them in April at House of Muir market. I entered his service at Martinmas, and found a great many of the ewes affected with foot-rot, and some of them a good deal fallen off in condition. I removed the diseased from the healthy, managed and treated them as already described, and in the course of a few weeks I got the disease nearly subdued. A few fresh cases were always breaking out weekly; but, by proper attention and treatment, the disease never spread to any extent; and when the ewes, eight score in number, were sold, only one sheep was slightly affected.

I will next consider the treatment of foot-rot when it breaks out between the hoof, discharging a thick adhesive matter. As we have already said, lambs are most liable to be affected in this manner; sometimes the whole four feet are attacked at the same time. The most successful application I have ever seen is Cuff's Foot-rot Powder, if the disease is caught in the first stage, and it is highly necessary a dry day should be selected for dressing. As soon as the animal is observed to show lameness, it ought to be caught; and a hard cloth should be drawn between the hoof to clean it well, after which a little of the powder in a dry state should be applied, which can be easily done with the point of a knife. The animal ought always to be held on its rump for a few minutes after the application. The first or second dressing will always effect a cure if the disease is taken in time. If the disease appears to spread through a flock, the whole ought to be examined at once, and not wait till they all become lame. No time ought to be lost, but the most energetic measures taken, as it spreads with alarming rapidity. Every lamb ought to be examined carefully; and wherever there is the least appearance of matter, or even tenderness, a little of the powder should be applied. A great deal of after-trouble will thus be saved, and the flock prevented from losing condition. If the disease is allowed to run its course for some time, and progress below the crust around the heel, the knife must be employed, followed by the butter of antimony, as the powder is slow in effecting a cure

after the foot has become all ulcers and proud-flesh; but if the disease is caught in the first stage, I have never seen Calf's Powder fail to effect a cure.

Prevention.—It will be seen, from the facts already stated, that foot-rot in sheep is a disease difficult to prevent upon certain soils: the only preventive, or at least modification of the disease that I have seen had recourse to, is thorough drainage. The effect of this we have seen established on the farm of Harehope, Peeblesshire, which is celebrated as one of the richest in the county. For many years it was but partially drained, and the grass grew unusually rank and soft throughout the summer, and a great part of the sheep pasture was always saturated with moisture; consequently, in autumn the grasses were usually rotted down and decayed, in a state highly favourable for the propagation of foot-rot, which abounded. The farm changed tenants about twenty-two years ago, and fell into the hands of Mr. Tod, Cardross Maize, who got the stock at valuation at the term of Whitunday. At that period a great many of the sheep were seriously affected and deteriorated in value from foot-rot; and as the summer advanced, and vegetation began to increase, the disease extended its ravages in proportion, till nearly a third of the entire stock, which amounted to above eight hundred, was more or less affected, notwithstanding the most strenuous exertions of the shepherd to subdue the malady. Mr. Tod commenced a thorough drainage in summer; and some idea of the rankness and luxuriance of the grasses may be gathered from the fact that the workmen found the operation utterly impracticable during the summer months, when vegetation was in full growth, and were compelled to stop. They resumed work, and prosecuted it successfully, during the winter and spring, before vegetation commenced. After, the foot-rot began to assume a more manageable state; and in the course of a year the disease was totally under subjection. A few cases were always occurring annually, and will on such soils under the best precautions; but the shepherd was able to keep the disease from spreading to any extent. The drains were, however, always kept in thorough repair, which is one of the great safeguards on soft grassy land; and if the soil is kept thoroughly drained on hill pasture, and the shepherd has not got too heavy a charge, it is quite possible to keep sheep, if not entirely free of foot-rot, at least from suffering any serious effects from it. It is highly reprehensible to keep shepherds working at farm

labour, as is the custom in a great many districts, neglecting his flock; the blame then rests totally with the farmer; the only preventive being draining the pasture thoroughly, and the strict attention of the shepherd in treating the disease as soon as it can be recognized. Upon rich old grass parks the disease is not so easily prevented. Indeed, upon some gentlemen's parks, where they have lain long in pasture, and where they are not allowed to be ploughed, prevention is almost a matter of impossibility in certain seasons; and there is often no other alternative but strict attention to treatment, and examining every sheep minutely, and paring the loose hoof off before it begins to fester, and anointing with the already mentioned application where there is the slightest symptom of disease. When the foot-rot attacks lambs, breaking out between the hoofs, discharging a thick adhesive mucus, I have seen him set well. A few earldoms were laid down at a gate in the entrance to a park, and the lambs were driven over it twice a day, which had the effect of hardening the hoof and drying any matter. The lime, however, in a short time gets baked and hard from the constant treading, and requires to be loosened or raked up every now and again; but, as we have already said, lambs are most liable to be attacked in wet weather, and then the safest course is to put them on bare, dry pasture.

Since the above report was written, I have known farmers, owing to the cattle-plague, keeping sheep in courts all winter for the purpose of converting their straw into manure, and the attack of foot-rot was very severe, arising from an insufficient supply of litter, for the feet of the sheep will not stand being steeped in urine like cattle. During the winter of 1865-66, Mr. Mitchell, Middlestead, put 110 hogs into courts, when in a short time the most of them were suffering severely from foot-rot, which greatly deteriorated them, and from which some continued to suffer till after Whitsunday. Next winter I prevailed upon Mr. Mitchell to give the courts another trial, offering to guarantee against foot-rot, if allowed sufficient litter. I put in one-third the number there was the previous winter, and was allowed space in proportion. They were placed in the courts in November, where they remained till April, having what I considered ample litter, and during all that time there was only one slight case of foot-rot, which was cured on the first treatment.—*Transactions of the Highland and Agricultural Society of Scotland.*

ROYAL AGRICULTURAL SOCIETY OF IRELAND.

The monthly meeting of the council of this society was held at 48, Upper Sackville-street, Dublin, Sir George Hodson, Bart., in the chair.

Amongst those present were the Hon. Bowes Daly, Hon. Captain Gough, Hon. Charles J. Trench, Wm. Donnelly, C.B., Lieutenant-General Hall, C.B., Wm. Fetherstonhaugh, Wm. Bolton Massey, P. Jocelyn Newton, Charles Colthurst Vesey, William Owen, Robert Wade, R. M. Carden, J. P. Byrne, Rev. W. R. Bagot, John F. Meekings, Denis Kirwan, Edward Purdon, Michael Cahill, Dawson A. Milward, P. Riall, Hans H. Woods, H. J. MacFarlane, R. H. Borrowes, R. Harris, and Joseph Kineaid.

A letter was read from Lord James Butler, resigning his position as vice-chairman, and his seat at the council.

The CHAIRMAN said he held in his hand the report of the committee appointed to consider the designs sent in for competition for the lord-lieutenant's prize for labourers' cottages. After a patient investigation, and sitting numerous times, the committee were, from the reasons stated, unable to arrive at any result, inasmuch as the estimates exceeded the price named. The report was: "That this committee report to the council that they have frequently met in full numbers, and carefully examined sixty-two designs submitted to them; that having reduced that number to three, the latter were submitted to competent professional measurers, who carefully calculated the expense, and found that in each case the cost

was in excess of the price named. The committee further have to express their great regret that they are unable to take into consideration several designs evincing great merit, in consequence of the too costly nature of their construction." In the opinion of the committee, it would be necessary that some intimation should be made to his Excellency of the decision unfortunately come to. Some of the members, thought his Excellency should be invited to inspect the designs sent in; but, to his mind, that would be invidious, inasmuch as none of them were worthy of the prize offered. The prudent course would be to send the three selected.

The suggestion of the Chairman was agreed to.

Mr. WADDE explained the course adopted by the committee in employing competent measurers, who pronounced that the work could not be executed for the price named, and proposed that the plans in question be referred to the finance committee to report the propriety of purchasing them for £10 for the use of the society, with a view of having them lithographed and printed, and sold to the members at 6s. a set.

The resolution, having been seconded, was adopted.

The following gentlemen were balloted for, and unanimously elected members of the society: Thos. Bruell, Kildare; E. W. Bond, Eccles-street; L. Malone, Pembroke-road; T. C. Townsend, Molesworth-street; John Malone Ballinacary; and A. H. Smith-Barry, M.P., Queenstown.

The council then adjourned.

CENTRAL CHAMBER OF AGRICULTURE.

A Council Meeting was held at the Salisbury Hotel, Fleet-street, on Tuesday, March 31, Mr. Jasper More, M.P., the President, in the chair. There was a large attendance of members, and amongst others present were the Marquis of Bath, the Earl of Lichfield, Lord Berners, Mr. M'Lagan, M.P., Mr. T. D. Acland, M.P., Mr. Neville Granville, M.P., Mr. W. H. Maxwell, M.P., General Herbert, M.P., Mr. E. Greene, M.P., Mr. C. S. Read, M.P., Mr. Corrance, M.P., Sir W. Galloway, M.P., Mr. Holland, M.P., and Mr. Wyld, M.P.

The minutes of the last meeting having been read, and some new members elected, the Earl of LICHFIELD asked permission to say a few words upon the subject of education. Nobody felt the importance of the discussions of the Chamber more than he did; but he was in the unfortunate position of being member of a Commission which made it impossible for him to remain in the room longer that day than for a very few minutes. He was extremely desirous of bringing forward some resolutions on the education question, which he thought had been scarcely satisfactorily dealt with at the previous meeting, and he was anxious to ascertain whether it was the opinion of the Council generally that the discussion should be re-opened. If that were the case, he should be prepared at a future meeting to introduce some resolutions upon the subject.

The Rev. Mr. GARNETT, Botsfeld, being of opinion that as the education scheme had only been just propounded in Parliament, and hardly sufficient time had elapsed for its consideration, it would be well to adjourn further discussion until the next meeting of the Council, when Lord Lichfield might have the opportunity of proposing his resolutions, and expounding his views thereon.

Mr. CLARKE (North Cheshire) considered the Chamber would stultify itself by proceeding at that moment to pronounce an opinion on the Government plan. The question should at least be adjourned until the provincial Chambers had had an opportunity of considering it, and instructing their delegates at a future meeting of the Council.

The CHAIRMAN thought at the last meeting that it was desirable to adjourn the discussion, because the Government plan was not then before them. Subsequently, the Duke of Marlborough in the House of Lords had shadowed out the general features of the scheme, but they were yet ignorant of the details.

Mr. M'LAGAN, M.P., also assumed that the Chamber was not in a position to discuss the subject. He advised therefore that the resolution prepared by the business committee should be read, and the debate thereon be adjourned.

Mr. C. S. READ, M.P., upon the understanding that the discussion would be at once adjourned, then moved the resolution recommended by the committee as follows:—"Understanding the principle of the Government Education Bill to be an extension of the system of grants-in-aid out of the imperial revenue, without imposing any further burden upon ratepayers, and without making attendance at schools compulsory, this Chamber expresses its approval of the general provisions of the measure introduced by her Majesty's Government." The first point that he wished the Council to bear in mind was, that the Government did not propose the adoption of a system of compulsory education. If they wanted an Englishman not to do a thing, they should try to make him do it. They could not deter men from committing great crimes, even by imposing enormous pains and penalties upon them. What they wanted to do then was to encourage, not to attempt to force, people to educate their children; and the object of the Government was one which he and others in the country had constantly urged; it was this—that where their schools were small, and they could not afford to have a certificated teacher, there they should have payment for results, and a certain amount of Government assistance (Hear, hear). He did not think that the Government scheme went quite far enough; but that might be matter for future consideration. They proposed, he believed, that where a school contained less than 80 or 70 scholars, and was unable to support a certificated teacher, the

children should be examined by a Government inspector, and in the event of their passing that examination satisfactorily, that they should receive 18s. per head of capitation grant, and not the 4s. for attendance; that was to say, they should receive just two-thirds of the benefit which would result if the school were under a certificated teacher. Then, with regard to the question of rating, the Government did not propose that that should form part of their plan; and this he thought was in entire accordance with the spirit of the resolutions which were passed at their last meeting. As long as the rating area was entirely confined to real property, which was not above one-third of the whole property of the kingdom, it must be very unfair, and they as agriculturists ought to try and prevent any further addition to the rates on that small portion of the property of the country (Hear, hear). He might, perhaps, be allowed to say, that if a district did not build schools, and really could afford to build them, he should not be indisposed to put a little force upon such a locality; but then they must not go and make the occupiers of the property of that district who had only a very transient interest in the property that they occupied bear the entire burden (Hear, hear). If they took the Property-tax assessment as the basis for levying their rates well and good. Or if they could imitate the assessment which they had in America, it would be equally efficacious. He spoke in the presence of Mr. Howard, and that gentleman would tell them that the rates were levied in the United States, not so much on the annual value of the holding as on the profits which might be made out of that holding. For example: supposing a farm were worth £200 a-year, and a factory were worth £300 a-year, according to the English method of assessment, both farm and factory would be assessed at £300 a-year; whereas if the assessment had been on the profits, and the farmer made £100 a-year, and the manufacturer £1,000 a-year, the farmer would be rated at £100 a-year, and the manufacturer at £1,000.

Mr. JAMES HOWARD said that the basis of the assessment was the profits.

Mr. C. S. READ observed that in fact that was a property-tax assessment, instead of the assessment which they had of the annual value of the holding. Believing that the Government Bill, although it might be imperfect in its details, was in its main principles right, he had very great pleasure in moving that resolution (cheers).

Mr. T. HORLEY seconded the motion, which was very much in accordance with the resolution passed at the recent meeting of the Warwickshire Chamber and other chambers that had discussed that subject: the main points being that education should be encouraged, but not made compulsory, and that the charge for educating the poorer classes of the community should be thrown upon the present small area of rating.

Mr. J. HOWARD, although opposed to compulsory education, regarded it as a fatal defect in the Government scheme, that it did not make it obligatory upon some public body, local or general, to provide sufficient means of education in districts where they did not now exist.

The discussion was then adjourned until the next Council meeting.

The Rev. E. SMYTHIES proposed the following resolution: "That this Chamber confirms the subjoined resolutions on Turnpike Trusts passed at the Council meeting of February 5th, 1867, and, considering that no settlement of the question can be satisfactory which is based upon the exclusive rating of real property, determines to oppose Mr. Kaatcbull-Hugessen's Turnpike Trusts Bill.

1. "That, as two committees of the House of Commons, one in 1836 and another in 1864, have, after full inquiry, reported that the turnpike system is vexatious and expensive, and that, under certain conditions, the abolition of turnpike trusts as at present existing would be beneficial and expedient, and as some trusts are in course of abolition, thereby inflicting serious hardship and injustice on certain parishes, it is the opinion of this Chamber that turnpike trusts should be abo-

lished simultaneously, and that provision for the future maintenance of all public roads should be settled by legislation on a fair and equitable basis."

2. "That as much of the expenditure in the formation of turnpike roads was incurred for imperial purposes, it is the opinion of this Chamber that the Consolidated Fund should aid in the liquidation of the remaining debt, when that debt has been fairly appraised or valued by competent authority."

The object of the resolutions and of the bill was the same, namely, the abolition of the turnpike trusts; but there was a difference as to the future maintenance of the roads, which the bill threw exclusively upon the real property. Another important question which underlay this was that of assessing all property whatsoever for the maintenance of the public burdens; and so long as that question remained open such legislation as that proposed by Mr. Knatchbull-Hugessen was at least premature. It was upon these grounds only that he thought the Chamber could not agree with the hon. gentleman's bill. There was one other defect, however, and that was that, whilst abolishing turnpike trusts, it did not abolish tolls, but retained them in all parishes not included in highway districts for eleven years to pay off all existing debts.

Mr. DUCKHAM, in seconding the resolution, said it had been repeatedly stated that the through communication of the country had been so materially altered by the construction of railways that the older thoroughfares were no longer what they once were, that they had ceased to be used for through traffic, that they were simply local means of communication, and therefore ought to be supported entirely by the localities. Now his (Mr. Duckham's) county, Hereford, was peculiarly agricultural. If, then, the traffic were merely local and confined to the inhabitants of the county and those who were chiefly occupied in the cultivation of the soil, a decrease of revenue would be apparent on the great thoroughfares. But instead of that he found that the revenue of the Hereford turnpike trust in 1861 amounted to £5,940, in 1862 to £6,281, in 1863-64 to £6,525, in 1865 to £6,632, and in 1866 to £6,896, being an increase, and that a steady one, on the 6 years, of £956, or rather over 16 per cent. The district was a purely agricultural one, and was admirably supplied with railway accommodation. Not less than five distinct lines radiated from its centre, and it had a canal which conveyed the agricultural produce of the district to all parts of the kingdom. And surely, if the assertion that the through traffic had decreased were true, it would be impossible to show such an increase of revenue as 16 per cent. in six years. Taking the district in which he himself resided, he found that the increased expenditure upon the repair of the roads had been equal to 12 per cent. during the past four years; and that, he thought, went far to confound the statement that the railways had so far diverted the through traffic from the great public highways, that the burden of maintaining the latter ought to fall entirely upon the locality. In the Ross highway district, on the other hand, consisting of 230 miles of bye-roads, the expenditure, instead of increasing, remained almost stationary. In 1865 it amounted to £2,955, in 1866 to £2,879, and in 1867 to £2,943. As they were aware, bye-roads were more intimately connected with the removal of the produce of the soil, and there they had not the increase which he had shown to have taken place upon the turnpike-roads. He was not surprised that in certain quarters there should be a strong feeling in favour of abolishing the tolls, and placing the maintenance of the roads on the occupiers of real property. The trading classes of the country, for instance, were deeply interested in removing the tolls. A large amount of revenue was at present derived from the transit of their goods; and in his own locality immense injury was done to the roads by the conveyance of timber, upon which no rate fell, and under the existing law could not fall. It was not surprising, then, that certain landed proprietors were decidedly favourable to the removal of the turnpike gates, and placing the charge upon the shoulders of the tenantry (Hear, hear).

The CHAIRMAN remarked that experience was not uniform in all localities; and the question should be considered as it affected the country at large, and not particular districts.

Lord BERNERS spoke in support of the resolutions, and urged the agricultural community to oppose Mr. Knatchbull-Hugessen's bill in its present shape by all the means in their power. What he chiefly objected to in that measure was that it threw the expense upon the land, already too heavily bur-

dened by unjust charges, which he trusted the present Government would have time to look into. Upon reading the appendix to the report of the Poor-Law Board, they would perceive the statement that considerably more than one-third of the whole of the parochial rates were levied and expended for purposes totally unconnected with the relief of the poor. The highways were maintained as much for the use of towns as of the country; and at the Leicester Chamber the other day a gentleman mentioned the fact that one-third of the whole of the tolls paid in that county were levied within the radius of the borough, and that many farms paid in one year as much in tolls as their roads would cost in twenty or thirty years. His (Lord Berners's) opinion had long been that there ought to be but one rate levied for income-tax, county and poor-rate, and that that should be levied upon every description of property; because these were national purposes and not for the benefit of any particular class.

Mr. NEVILLE-GRENVILLE, M.P., quite concurred in all that had fallen from the three previous speakers, and felt indebted to Mr. Duckham for adducing such valuable facts as he had referred to. For his part he had come to the Chamber that day not so much for the purpose of listening to arguments against Mr. Hugessen's bill, as in the hope that he should hear some arguments in its favour, especially as he had been informed that the hon. gentleman was to be present to explain the provisions of his measure, and convert the council one and all to his own way of thinking. It was much to be regretted that the hon. gentleman was absent, and that there was no body in his place to secure for him so desirable an end (Hear, hear, and laughter).

Mr. CORRANCE, M.P., shared the regret expressed by Mr. Neville-Grenville that Mr. Knatchbull-Hugessen was not present to explain and support the provisions of his bill, especially as among the agricultural body generally the opinion seemed to be unanimous against the measure. It would have been an advantage, therefore, if Mr. Hugessen had attended and given them some information on the subject. But he might add, that from the moment the honourable gentleman introduced his bill he had acted with moderation and temper, and uniformly displayed a desire to conciliate opinions with the view of carrying the measure into effect. Last year when the measure was brought in he (Mr. Corrance), speaking on behalf of his constituents, who were interested in a considerable extent of turnpike roads, intimated that if the bill were not greatly modified, he for one could not accept it. And his reasons for taking that course were various. The resolutions before the Chamber contained one specific point, and upon that point he would touch; but he might also be permitted to state what were his main objections to the bill. This he thought was due to Mr. Hugessen, who had frankly declared what was the object which he wished to attain. First then the ground on which he should appeal to the House against the bill was the unfair apportionment between the various parishes where a highway district did not exist. Next there was the danger of an improper use of the turnpikes, by haulage and other things, which were carefully guarded against by existing acts. And when these acts had ceased the state of things would be this—that the towns would have the liberty of using the roads, and the country districts the benefit of repairing them. Then there was the alternative of highway districts; and lastly, there was that most important reason which they found embodied in the resolutions—"that no settlement of the question can be satisfactory which is based upon the exclusive rating of real property"—and therefore the Chamber was determined to oppose Mr. Knatchbull-Hugessen's Turnpike Trusts Bill (Hear, hear). After all, that was in reality the most substantial objection to the bill; and he would venture to call attention to a few facts in its corroboration. To him it was a matter of great satisfaction to witness among the agricultural body so much attention paid to the important subject of rating. Referring to the returns which they possessed, they would find details of a very extraordinary character. So also would they do, if they turned to a report on local taxation dated as far back as the year 1843, and made by the most able men who were then at the head of the Poor Law Board—namely, Mr. Nichols, Sir Cornwall Lewis, and Sir Edmund Head. It was an extraordinary fact, which one could scarcely believe, that from the year 1843 down to the present time the suggestions then made, valuable and important as they were to the agri-

cultural community, had never been brought before the House of Commons (Hear, hear). Very lately, however, Mr. Ayrton, the member for the Tower Hamlets, proposed the appointment of a select committee of the House of Commons on the question of rates. Whereupon he (Mr. Corrance) went to the hon. gentleman and asked him what was to be the scope of the inquiry; to which he replied that it would be devoted simply to the status and position of the compound householder in boroughs. He (Mr. Corrance) then asked the hon. member if he would allow him to serve on the committee, and consent to widen the inquiry. Mr. Ayrton answered that he could not do so in that session; upon which he (Mr. Corrance) determined to avail himself of the information which that committee might collect, and use it in bringing forward the larger question (Hear, hear). In accordance with that determination, therefore, he should introduce the question to the House of Commons, and he would now state his reasons for the proceeding. In the first place he found the gentlemen to whom he had alluded speaking in their report in these terms: "We do not consider it necessary to multiply instances of the inconvenience of legislating on the subject of the poor's-rate, without taking into consideration at the same time the whole of the law relating to that rate, and also the law relating to all the other local rates, whether framed upon the same system as the poor's-rate or upon any other system; but we believe that scarcely one instance could be found of recent legislation upon the subject of the poor's-rate which has not indirectly produced as much inconvenience and confusion in regard to other rates as it has cured or prevented in regard to the poor's-rate itself." Now that passage was condemnatory altogether of the imposition of other rates on the basis of the poor's-rate. They then went on to say: "Scarcely anything can be more material than the declaration of the *persons or properties* to be rendered liable to a tax." The Council would observe that in some of these cases property was liable, and in some cases persons were contemplated (Hear, hear); but the latter had fallen into disuse, and property had been made the basis of rating throughout. They then went on to say: "There is hardly an instance in any modern act, where the intention has been to impose the tax on the basis of the poor's-rate, in which the purpose has been legally or unambiguously effected, not because there is any the smallest difficulty in effecting it, but merely because the draftsman dispensed himself from looking at the statute of the 43 Eliz., and Parliament and the public had no ready means of checking the draftsman while the bill was in progress. Thus the highway rates are made taxes on the property without apparently following the person." It was obvious, then, that that was never intended, and that it was utterly unjust (Hear, hear.) The report further stated in a foot note—That all the following rates came under the poor's-rates series; or taxes on the basis of the poor's-rate: 1, Poor's-rate; 2, workhouse building rate; 3, survey and valuation rate; 4, gaol fees rate; 5, constables rate; 6, highway rate; 7, highway rate, additional rate for purchase of land; 8, highway rate, additional rate for law expenses; 9, lighting and watching rate; and 10, militia rate. All these rates had been imposed on the basis of the poor's-rate, and the poor's-rate rested on the 43rd of Elizabeth, from which numerous exemptions had from time to time been made (Hear, hear.) There was another subject which he would ask the Chamber to consider, and that was the value of the property on which the rate had been levied. The value of the property upon which the income-tax was levied amounted to £296,031,791. This was assessed at the present moment at 5d. in the pound, and it gave a proximate revenue of £6,000,000. On the other hand, the value of the property on which rates were levied was £90,137,365, or about one-fourth of the other, and the annual levy was £14,966,761 at 3s. 6d. in the pound. So that upon the minor quantity of property amounting to £90,000,000 they were actually paying 3s. 6d. in the pound; whilst upon the major quantity, amounting to £296,000,000 there was paid only 5d. in the pound (Hear, hear.) Surely facts like these were sufficient to show the enormous pressure of the rates (Hear, hear.) But here came in this question: upon whom did the income-tax fall? Why, every person whose income was less than £100 a-year was exempt from the operation of the tax. But upon whom did the rates fall? Very largely upon the poorest class of the community. He was exceedingly pleased with a speech which was made in the House of Commons

the other day by Mr. Goschen on the subject of rating in the metropolis, in which the right honourable gentleman adverted to this point, and showed with what crushing severity the rates fell upon the humblest. Thus they were rating cottages of £4 and £5 a-year, whilst stock-in-trade, personal property, mines, and quarries were altogether exempt (Hear, hear). He confessed that he drew some comfort from the speech of Mr. Goschen, because he thought he saw looming in the distance a wider and larger consideration of the subject by the legislature (Hear, hear). As long as the question affected only occupiers and owners, very little attention would be devoted to it by Parliament; but the moment that they could show that it was an injury and an injustice to the poor man, they would possess an enormous advantage; for the poor man was a vast power in himself, at times and seasons when these things are properly pressed (Hear, hear, and laughter). At present the rates were levied on the basis of the lettable value, and the lettable value was the rent. Upon what did the rent depend?—upon competition; and a small farm would find more competitors for it than a larger one (Hear, hear). They would see, then, how utterly unfair it was to take the rent as the basis of rating; and, if Mr. Huggessen had been present, he should have asked him to show them that some great contingent advantage was to be derived from his measure. He doubted, however, if there were any such advantage; and the honourable gentleman must either offer a truncated and an imperfect measure, or accept that of a general highway-district on some general plan. He (Mr. Corrance) was in possession of certain data which, in due time and place, he should produce, and which must satisfy all that these districts had yielded disproportionate results—disproportionate, that was, to the magnitude of the machinery and the expense which was incurred. They might have better roads here and there, though the information was imperfect on that point; but he could show that all that had been predicted of this measure had entirely collapsed, though Mr. Huggessen, had he been there, might have disproved it to their entire satisfaction. It was proposed by Mr. Goschen, in his speech, that in this city of London a great divergence from the Act of Elizabeth should take place, and that at any rate a proportionate part of the local burdens should be met by means of an income-tax. That was a proposition which the agricultural community might accept, if it universally applied to their local taxation. On the other hand, if the difficulties in the way of the application of that principle and the resistance of vested interests should prove too great, then they must fall back upon the Consolidated fund (Hear, hear). That was another alternative in the case. But as to all these points, Mr. Huggessen, had he been present, might have satisfied their minds. He (Mr. Corrance) was not opposed to change, but if a change were made it must be in accordance with an absolute knowledge of the subject. He entirely objected to a merely tentative or provisional measure being adopted, and then at the end of a few years making it a compulsory measure throughout, in the absence of complete information with regard to its operation. To that he entirely objected. On the other hand, if it were in the power of Ministers or of Mr. Huggessen to satisfy the agricultural body in this respect, and offer them a measure which they could accept, he should be happy in his place in Parliament to give it his support (Hear, hear).

Mr. ANDREWS (Somerset) agreed with a previous speaker, that the meeting should confine itself to general principles. The general principle in this case was that nothing tended more to cheapen production than good internal communications, and if that were the case the whole country must be interested in their proper maintenance, and therefore the burden of maintaining them should rest upon some general tax.

Mr. WHITTAKER (Worcestershire) felt sure that if Mr. Huggessen's Bill were to pass into a law, it would impose a most grievous burden upon landowners and tenant-farmers. The expenses of the Worcestershire turnpike roads amounted, in round numbers, to £31,000 a-year; and, as trustee, he found that in one district, while the cost of maintaining the roads near towns was from £80 to £100 per mile; at a distance from towns it was only about £30. It was clear that the tradespeople and professional men of the towns benefited as much by the roads as agriculturists. A rate of five-pence and three-eighths of a penny in Worcestershire produced only £25,000 a-year, and if Mr. Huggessen's Bill became law there must be a sixpenny rate added, to make up the £31,000 a-year

expended. Another great objection to that measure was, that it would be a confirmation of the system of highway districts. Persons spending money on their own parish showed much more vigilance than persons living twelve or fifteen miles from the spot. In fact, a great number of waywardens knew nothing about the roads on which the money was laid out. A surveyor living at a distance sent in an estimate; the Board sanctioned it without due inquiry, perhaps authorizing an expensive work to please one or two persons, and the result was that the expenses were very much increased (cries of "No, no"). There were in Worcestershire seven districts, and he held in his hand an account of the expenses in each of four years under the old system and of four years under the new one. The roads in that county were, he might remark, as good as those of almost any county in England. Under the old system there was spent in four years in the Redditch district £840; under the new system there was spent in the same period £1,175, being an increase of 38½ per cent. In the Evesham district there was an increase from £1,153 to £1,446. In the Tenbury district the increase amounted to 57½ per cent. The Kidderminster district was the only one in which there was not an increase. It happened to be in a very favourable position, the chairman of the Board being a man of very business-like habits, who devoted nearly the whole of his time to the management of the roads, and being zealously supported by the waywardens. He objected to their being deprived of their legitimate privileges. The Corporation of London would not, if they could prevent it, allow their privileges to be taken from them; and why should the farmers of this kingdom submit to the control of their local expenditure being wrested from their hands by the Turnpike-road Bill of Mr. Hugesen, or by a Highway Act? What did the highway system amount to? Why the magistrates, of whom he wished to speak without anything like disrespect, might come to the meeting of the wardens, and almost outvote them ("No, no"). Farmers generally were, like himself, not very eloquent, and the magistrates might, at all events, out-talk if they did not outvote them (laughter). He would, therefore, advise farmers to watch with great jealousy any measure that might tend to take the control of the local expenditure out of their own hands.

Mr. GARDNER (Kent) could endorse what had fallen from Mr. Whittaker. In his district—that of Faversham—the rates had enormously increased in consequence of the establishment of highway boards. The last estimate showed an increase of 100 per cent. over the average of the three years immediately preceding the introduction of the Highway Act. In the Holme or Canterbury district there was an increase of 50 per cent.; and in many others the increase was considerable.

Mr. BURNHAM (Banbury) said he knew many firms of brewers, millers, and timber-merchants who had such a large traffic over the roads that they now paid two or three hundred a year altogether for tolls. These persons would escape under Mr. Hugesen's bill. Although they did not ask for it, they would of course be glad to receive this benefit, and the expense would be thrown on the ratepayers.

Sir MORDECAI WELLS said in his district (Peterborough) not only had the expense of the roads increased under the new system, but the roads had deteriorated. He deprecated any discussion on the general question of taxation. The Chamber of his district had met on the subject, and passed a resolution similar to the one before the meeting. In considering this matter it was important to look at the origin of the roads. If roads were made for parish or even for local purposes, there might be some justice in throwing the burden of maintaining them upon a local rate; but, in point of fact, many of the roads were constructed originally for imperial purposes. He happened to live in a parish in which lay for three or four miles the great Northern road, made for the convenience of communication between London and the towns of the North; and what justice could there be in saying, as Mr. Hugesen did in his speech last session, that his parish should maintain that road? (Hear, hear). He could not conceive Parliament sanctioning such a principle. If that road was to be maintained, it should be done by the property of the country generally. He denied that this was a landlord's question; it was purely a question concerning the occupier of the soil. The occupier would not go to his landlord every time an additional burden was imposed on the land, but would bear it himself. At the meeting to which he had alluded there were 150 men-

bers present, many of them having come from a great distance; and they were firm and determined in their opposition to the penalty—for as such they regarded it—which would be inflicted by Mr. Hugesen's bill.

Sir G. JENKINSON, said although he had no wish to enter into the general question of rating raised by Mr. Corrance, he could not help expressing a wish that county members would take up that question in Parliament in the interest of the agricultural classes. At present there were 800 millions of funded property which paid not one farthing of the local taxation, and to these he might add mines, quarries, and other kinds of property of immense value. As regarded the question of the highway districts, he thought the organisation of the boards was not sufficiently understood. He protested against the assumption of a preceding speaker that all the expenses of a district extending over 10 or 15 miles were settled by one or two gentlemen who wanted expensive jobs done in their own neighbourhood. The expenses of the highway districts were borne not by the entire district, but by the individual parishes in which the repairs were executed. The only general expenses borne by the whole district were those of the staff. Each parish paid for the roads within its area, and no parish had any extra work done except upon its own application. That was the rule in his own district, consisting of a Petty Sessional division of 13 parishes, and he should imagine it was the rule wherever highway districts were established. Therefore each parish had the control of its own expenditure. Farther, he contended that wherever highway districts were properly constituted, the control rested mainly with the tenant-farmers, and not with the magistrates. In his own district the magistrates were outnumbered by the farmers in the proportion of three to one. The work was better done than it was formerly, and the farmers seemed perfectly satisfied, especially as they now had their teams at liberty for their own purposes. It was impossible, he must remark, to deal with this question satisfactorily as a whole, without including turnpike debts. What he desired was an alteration of the law which would provide for a better distribution of the cost of maintaining turnpike-roads where the trusts were extinct. He wished to see something done which would secure the abolition of all turnpike trusts at a certain date to be named; and he should be glad if the Central Chamber could obtain, through the local chambers, a schedule of the debts of each county, showing how long they had existed, what proportion had been paid off, and what valuation would suffice to discharge the remainder. He believed that the total amount of the debt in England was about £3,000,000, and perhaps something like £9,000,000 would pay it all off if it were fairly valued. In some exceptional cases the Consolidated Fund ought, in his opinion, to contribute towards the liquidation. In the Forest of Dean there was a debt of £80,000 due to the crown for roads made for the benefit of crown property in the shape of timber, and surely that ought to be met out of the Consolidated Fund.

Mr. WHITTAKER, in some explanatory remarks said he believed Gloucestershire was now paying £7,000 a-year more for the highways than it did before the districts were formed.

Sir G. JENKINSON observed that the roads were improved.

Mr. J. HOWARD (Bedford) said, having property both in town and country, he must remark that what Mr. Corrance said with regard to the burden of roads out both ways (Hear, hear.) In the neighbourhood of Bedford there were three miles of roads which were maintained entirely by the borough, and by an inquiry which was made some time ago it was found that about three times as much of the traffic came from the country as from Bedford (Hear, hear).

Mr. PRICE W. BOWEN (Shropshire) was understood to remark that as a rule the townsman used a much greater extent of road than the farmer.

Mr. JAMES WEBB (Worcestershire) did not see how the maintenance of roads could be thrown better upon those who used them than it was at present. As chairman of the Evesham district he could corroborate what Mr. Whittaker said respecting the increased cost connected with highway districts. The increase in his district was 30 per cent., and the roads were worse. So bad, indeed, were they in one case that he had been obliged to go five miles round in order to get a thrashing-machine home. In the county of Worcester generally the greatest dissatisfaction had arisen from the working

of the system of highway districts; in fact, the system had proved a total failure.

Mr. D. LONG (Gloucestershire) would suggest whether it would not be well for the Chamber, instead of condemning Mr. Hugesen's Bill *in toto*, to confine its condemnation to that portion which referred to real property.

The CHAIRMAN agreed with Mr. Long that they should point out to what part or parts of the Bill their objections applied.

Mr. LONG then moved an amendment, in effect limiting the opposition to the third part of the Bill.

Mr. SMITHIN (Worcestershire), in seconding the amendment, said he did not see how, until there was a new system of rating generally, the burden of maintaining turnpike roads could be adjusted more equally than it is now. If Mr. Hugesen's Bill passed, hauliers, who did more damage to roads than almost any other class, and many of whom were only rated for a stable or a cottage at £5 a-year, would escape from contributing. Prior to the introduction of the Highway Act the roads in his parish were maintained at an average cost of £8 per mile per annum, and they were as good roads as could be desired. Their share of the establishment charges now amounted to more than the maintenance did formerly. He had, moreover, to ride twelve miles to attend a district meeting; the surveyor had also to travel twelve miles to perform his duties in the parish; and the result was that there was no supervision at all, and the roads, instead of improving, were deteriorating.

Mr. SMITHIN having on reflection withdrawn by consent his seconding of the amendment,

Mr. CLARK (North Cheshire) said he would second it. He regretted very much to hear some allusions which had been made to the attendance of magistrates at highway board meetings. In the course of fifteen or eighteen years' experience he had seen great advantages derived from the part taken by magistrates in meetings of poor-law guardians and other local gatherings. The chairman of the principal highway board in Cheshire was a well-known Chairman of Quarter Sessions, and he had by his conduct done much to promote economy of expenditure and to prevent abuses.

The Rev. E. SMITHIN thought the opposition to the Bill should be confined to the third part.

Mr. HODGKIN remarked that the taxation of real property alone for local purposes was contrary to the principle of the 43rd of Elizabeth, which provided that all should contribute towards the maintenance of the poor according to their means (Hear, hear). They ought, in short, now to insist, through their members in the House of Commons, upon a proper equalization of the pressure of local taxes (cheers).

The CHAIRMAN said, before putting the question, he wished to make one or two remarks. He must say that he thought it was not desirable for the Chamber to declare that it was entirely opposed to the abolition of turnpike trusts. Had Mr. Hugesen, who was probably detained in a committee of the House of Commons, been present, he would no doubt have told them that it was useless to discuss that question, because some trusts were in fact running out from year to year. Two committees of the House of Commons—and they all knew that the committees were composed of persons holding opposite views—had arrived at the conclusion that it was politic to abolish turnpike trusts. They would not, he thought, be justified in saying that the majority of turnpike roads were made for imperial purposes. Many of them were evidently formed for the benefit of private estates. He must add that in the county of Suffolk so thoroughly convinced were the landlords of the desirableness of abolishing turnpike trusts, that they paid the debts out of their own pockets; and you might now ride twenty-five miles in that county without seeing a tollgate (Hear, hear). As regarded the working of the Highway Act, he had heard, on good authority, that it was the opinion of the late Sir George Cornwall Lewis that it would be unpopular until turnpike trusts were abolished, but that it would then be popular. The Act commended itself to farmers by the fact that

under it there was one set of officers instead of two or more. All turnpike trusts were abolished, of course the area of rating ought to be made as large as possible. In his opinion, the prejudice against the system arose chiefly from the passing of a continuous bill relating to roads at the end of every session. In France there was a minister who, though called Minister of Agriculture, was chiefly occupied in the ad-

ministration of roads throughout the whole country; and he thought it would be well if our Government could be induced to appoint some under-secretary, who would combine in one office the agricultural business of the Board of Trade and the agricultural business of the Home-office (Hear, hear). That was a point which might, he believed, be urged upon the Government with some hope of success. Mr. Acland, one of the members for Devonshire, had, he might remark, given notice in the House of Commons that, after Easter, he would "call attention to the inconvenience arising from the want of an authority specially charged with the duty of considering questions affecting agriculture and the food of the people, and move for a committee to examine and report on that subject." He was glad to see Mr. Acland present; and they must all feel obliged to him for having resolved to direct the attention of Parliament to the existing anomaly.

The amendment was then put and negatived, the numbers being 9 for and 18 against it; after which the original resolution was adopted without a division.

On the motion of Mr. Duckham it was afterwards resolved that a copy of the resolutions be forwarded to Mr. Knatchbull Hugesen.

The CHAIRMAN said the next question to be considered was whether the Chamber would support the Bill of Mr. Wyld for establishing financial boards, then before the House of Commons. The subject was, he remarked, first introduced in the House of Commons by the late Mr. Hume, and afterwards by Mr. Milner Gibson; and it had not been heard of for some time, when it was taken up by Mr. Wyld. It seemed to him highly desirable that Parliament should now be made aware whether the Chamber of Agriculture and the farmers throughout the country considered Mr. Wyld's Bill worth supporting. The Bill was founded on the old principle, which was affirmed by both parties in the House of Commons, that representation should be co-extensive with taxation. He was sure that no member of that Chamber could desire to cast the least reflection upon the magistrates or to accuse them of any want of economy; and, on the other hand, as a magistrate, he believed the magistrates generally were anxious to know whether the farmers cared to have the additional powers provided for in the Bill given to them or not.

Mr. WILMER (Worcestershire) said that at a meeting of the Chamber of his county, held on Saturday, a resolution was passed approving of the object of Mr. Wyld's Bill, and he had now great pleasure in moving the following resolution, which had been prepared by the Council of the Central Chamber on that occasion: "That in the opinion of this Chamber the establishment of County Financial Boards is highly desirable; and that all the Provincial Chambers be requested to express their opinion upon Mr. Wyld's Bill before the Central Council Meeting of May 5th." He said he would take the liberty of cautioning the ratepayers generally against expecting to derive very much benefit from the proposed change. He did not think that if certain ratepayers were associated with the county magistrates they would get policemen for much less wages, or that lunatic asylums would be managed at much less cost; but he could have no doubt, after the expression of opinion on Saturday last, that they would be very much gratified at having a finger in the pie (laughter).

Sir W. P. GALLWEY, M.P., said he wished to explain the position in which he stood in relation to Mr. Wyld's measure. Having taken up the question himself spontaneously, he should be sorry if the idea went forth that he had acted insincerely or without proper zeal. At a meeting held in the North Riding he pledged himself to bring before the House of Commons a motion having for its object the establishment of county financial boards—provided no other person who was better fitted to deal with the matter should take that course. After coming up to town he gave notice of the introduction of a bill; but he unexpectedly found that there was another bill on the same subject—namely, that now under the consideration of the Chamber. The two bills were placed in a very different position. His bill could not, according to the custom of the House, be printed until it had been read a first time, and therefore it was not ready for examination; but Mr. Wyld, with an amount of public spirit which would no doubt be appreciated, had already, at considerable expense to himself, printed his bill and circulated it throughout the country (cheers). Under those circumstances he had consulted with the Chamber of the North Riding as to the best course to be pursued, and he had

told them that he thought Mr. Wyld's bill should be taken as a basis of legislation, without reference to the question whether they entirely agreed with the hon. member or not (Hear, hear). On Friday last that bill stood for a second reading, and the order of the day was accompanied by a notice of motion in his (Sir W. Gallwey's) name to the effect that if it were read a second time it should afterwards be referred to a select committee (cheers). He thought that course would be the best, for unless it were re-modified and altered it could not pass into a law. Unexpectedly the Government refused to allow the bill to be read a second time, without which his own notice of motion of course could not take effect. That was the exact position in which the matter now stood. He had no object except to carry out the principle mentioned by the chairman—namely, that representation should accompany taxation (cheers). He certainly did not see why local taxation should form any exception; and he thought that referring Mr. Wyld's bill to a select committee would afford the best chance of the attainment of the object. His chief objection to the bill was its very great length, consisting as it did of about 140 clauses. Another objection was that it was a permissive bill. His experience of the working of permissive bills was not favourable to that feature. In the case of the Highway Act, that feature had made it a bone of contention; and he would ask those who listened to him whether they ever heard of a bill which had proved more calculated than that was, to divide the two great classes of occupiers and magistrates (Hear, hear). If Mr. Wyld's bill were made compulsory, a vast number of clauses might be struck out, relating as they did to the machinery required to bring it into operation. A further objection was that it was proposed to give to financial boards power to increase the county rates. Surely the only object of introducing financial reform into counties was to diminish expenditure. The Bill gave power to financial boards to increase the number of constables, against the opinion of the magistrates, who they must all admit were solely responsible for the peace of their respective counties. This Bill wounded the susceptibilities of one of the most susceptible bodies of men in the country by rubbing them up the wrong way (laughter), and it was important to take care that the clauses of the Bill corresponded with its title. Such were his objections to the Bill; but he must add that they did not in his opinion prevent the Bill from forming a good basis for legislation.

Mr. GREEN, M.P., thought the Chamber was greatly indebted to Sir W. Gallwey for his explanation and remarks. He believed that the magistrates would be happy to act with other members of financial boards, all that was wanted being to bring about financial reform. He perfectly approved of the principle that taxation and representation, in that case as in others, should go together; and it was matter for consideration whether, if financial boards were not established, the county rates should not be paid by the landlords.

Lord BERNERS said he was almost inclined to make a very unpopular motion on that question, supposing he could find a seconder, namely that the word "aye" be left out and the word "not" substituted. He had always rejoiced at the co-operation and kindly feeling between magistrates and occupiers in boards of guardians, highway boards, and other local bodies, and that feeling disinclined him to propose such an amendment. He was, however, opposed to the motion before the meeting. As the Chairman had observed, this question was originated by the late Mr. Hume. It was then considered a party question; and in a conversation on the subject, Mr. Hume himself admitted that he believed that if financial boards were established not a single penny would be saved. As had just been remarked, the magistrates were responsible for the peace of the county. They were also responsible for the public buildings being of a permanent and useful character. The greater proportion of the magistrates were owners of the soil, and were responsible for the general and permanent interests of the county; while the occupiers, generally speaking, were not in the same position. He remembered that when alterations were being made in gaols, and a new system was being introduced, there was a great cry against the extravagance of the magistrates; whereas in fact all the work was executed under the authority of the Government. It was simply because magistrates had a permanent interest and tenant farmers generally had not, that he was opposed to this alteration. As a landlord, he for one would be quite ready to consent that landlords should pay the whole of the county rates themselves,

Sir M. WELLS said in his district (Peterborough), there were a great many gentlemen who were large farmers but not magistrates, and who were not likely to become magistrates, and he never could see why these gentlemen should not be represented as regards county expenditure. The Noble Lord who had just spoken assumed that the magistracy consisted entirely of owners of land. That was not the case in the district in which he resided; in that district there were many magistrates who were not landowners. But he took much higher ground than that. He considered that the ratepayers were entitled to be represented (Hear, hear); he thought that the man who had invested thousands in his occupation ought not to be overlooked (Hear, hear.) This was not a landowners' question—it was a ratepayer's question. Moreover, when a man had embarked his capital in a thousand acres of land he had, in fact, a permanent interest. He could not afford to lose his capital: his own interest and that of his family bound him to continue to occupy the farm as long as he could; and it must be a very good reason that would induce him to give it up. He maintained, therefore, that this was not a landowners' question, but one bearing directly on the interest of those upon whom the burden was imposed; and when Parliament looked to the sources from which the taxation was derived, it would no doubt arrive at a sound conclusion as to the persons who ought to be represented (cheers.) Knowing the feeling of the influential chamber which had deputed him, he should be exceedingly sorry if that central body came into conflict with the local chambers, and it would do so if it passed such a motion as was indicated by Lord Berners. He believed that, without a single exception, the farmers who belonged to the local chambers, and also formed the majority of the members, were determined that this question of financial boards should be settled (cheers); they were determined to be fairly represented in reference to county expenditure (Hear, hear). He felt bound to say for the magistracy of his neighbourhood that he did not think there was any jealousy on their part on that subject (Hear, hear.) On the contrary, he thought they felt that what was proposed would relieve them from invidious observations in regard to county expenditure, and many had observed to him that they would be glad to co-operate with such men as they were in the habit of meeting in boards of guardians and other local bodies (cheers.) Although there might not be any considerable reduction of expenditure, it was most important that there should be established an agreeable and proper state of feeling between the magistrates and the influential ratepayers; and he felt persuaded that in all matters of expense connected with lunatic asylums and gaols the practical experience of gentlemen occupying large farms and laying out upon them large sums of money would be found by magistrates exceedingly valuable. Parliament could not refuse as a matter of justice to act on the principle that taxation and representation should be co-extensive (Hear, hear). If the slightest attempt were made on the part of the magistrates to get rid of this question that would injure their own position. He was satisfied that Parliament would in the end see the absolute necessity of such an influential and powerful class as the occupiers of the soil being duly represented; and any little inconvenience which might arise from distributing the power of the magistracy would be as nothing compared with the advantage of having in the management of financial matters the services of those who had the interest of the county so much at heart, and of having the business conducted in a manner which was satisfactory to the ratepayers as a body (cheers).

Mr. ANDREWS entirely concurred in the observations of Sir Mordaunt Wells. To show that the question was not peculiarly a land question, he referred first to the case of the clergyman, and next to that of the occupier, whether of a farm or of a house in a town. In the former case, he would suppose a gentleman to have entered on his living prior to the introduction of the new Poor-law. At that period there were no buildings in the shape of union-houses; but since the year 1835, in his own county (Somerset) for example, they had built, at the expense of the clergyman, or his share of the rates, union-houses, assize-courts, and a lunatic asylum, and were now about to erect an asylum for idiots. The clergyman, however, possessed only a life-interest in his living; and when he died, where was the interest which his family could have in these permanent improvements? (Hear, hear.) So, too, with the occupier. A gentleman entered upon the occupation of his farm,

say thirty-five years ago; and when he quitted the farm, he would stand precisely in the same situation as the clergyman's family. Since the passing of the new poor-law, he would have contributed his share, according to his occupation, towards the erection of such buildings as he had just enumerated, and would continue to do so as long as he held the farm; but when he quitted it, what further interest had he in this poor-rate property, which had been improving for all those years in so many shapes? From these instances, then, they might draw the conclusion that it was even more of an occupier's and a clergyman's question than that of the landlord, because it bore immediately upon the interest of the two former, and only incidentally on that of the latter.

Mr. T. HORTLEY supported the motion, and said that at the meeting of the Warwickshire Chamber, on Saturday last, attended by the lord-lieutenant of the county, the chairman of quarter-sessions, and several of the leading magistrates, who were on the financial committee, the following resolution was adopted unanimously: "That the present system of administering the county expenditure solely by the magistrates in quarter-sessions assembled, without any direct representation of the ratepayers, is opposed to that just and equitable rule which prevails in all other cases where public money is provided either by taxation or rate. It is therefore resolved that it is the opinion of this Chamber that financial boards ought to be established to control the county expenditure, and that the ratepayers should be represented thereat, and practical economy developed." This was carried without a single dissentient voice; and several of the gentlemen who took a leading part in discharging the county-rate of Warwickshire, not only assented to it, but said that they would be delighted to see it become the law of the land, and to act with the ratepayers on the county financial board.

Mr. GARDNER remarked that the tenant could not go to his landlord for a reduction of rent in proportion to the increased rate that might be imposed upon his holding. It could not therefore be regarded as a landlord's question, except in the case of a new letting.

Sir GEO. JENKINSON, who objected to Mr. Wyld's Bill on the ground of its being permissive, and contended that any Bill, to be satisfactory, must be compulsory, suggested that the motion before the Chamber put the cart before the horse. He moved, as an amendment, therefore, "That, in the opinion of this Chamber, a complete revision of local taxation is required, and that all the provincial Chambers be requested to express their opinion upon Mr. Wyld's Bill, and the establishment of local boards, before the Central council meeting of May the 5th.

Lord BERNERS having seconded the amendment,

The CHAIRMAN said he did not agree with Sir G. Jenkinson that the motion placed the cart before the horse. The first portion of the resolution merely approved of the principle of financial boards, and the second requested that all provincial chambers should express their opinion on a particular measure which embodied that principle. In fact the amendment would forestall without discussion a resolution which was to come before the Chamber at their next meeting.

Mr. WYLD, M.P., explained that his Bill, in the first instance, was not precisely permissive, but gave boards of guardians the power of initiating the system he proposed. The machinery was simple. A vote would be taken of the whole of the board of guardians in the county, and by a majority they would decide whether the Bill should be adopted or not. The measure then went on to establish county boards, to consist half of justices of the peace and half of rate-payers, to be elected by the guardians of the respective unions; to the approval of these boards would be submitted all the accounts of the magistrates, and the action of the boards would be confined to matters of finance without interfering in the slightest degree with the judicial functions of the magistrates. It would be seen moreover, upon reading the Bill, that there would not exist on the part of any financial board the least power of increasing the constabulary. They would have the power of auditing the accounts, which as financial boards they ought to have, and to receive reports from the chief constable, whose accounts they would examine. But the only semblance at all of any power to increase the police was this: If the financial board thought an increase of the force was necessary, they might address the Secretary of State upon the subject. Sup-

posing the peace of a county was disturbed, and the magistrates refused to augment the constabulary, then the Financial Board might make a representation to the Home Secretary on the subject, on the representation of the ratepayers. He agreed in the opinion expressed that day, that the more they looked into the matter the more they would find that this was peculiarly a tenants' and occupiers' question. It had been said that tenant-farmers generally could not work harmoniously with the magistrates; but they knew that in the case of the Assessment Act, the Cattle Plague Act, and the Highway Boards the magistrates had been compelled to invite the co-operation of the tenant-farmer, and had profited considerably thereby. The landlord might be an intelligent man, but unless he farmed his own estates he lacked the practical experience and knowledge of details possessed by the tenant (cheers.) He thought, therefore, the tenant ought to be associated with the magistrates in levying and superintending the expenditure of the rates.

After some observations from Mr. UMBERS and Mr. WEBB in favour of financial boards and the representation of the tenantry thereon, the amendment was put and negatived, only two hands being raised in its behalf. The original motion was then agreed to almost unanimously.

On the motion of the CHAIRMAN the two following resolutions from the business committee were also put and carried: "That this Chamber views with much satisfaction the regulations on the cattle and sheep contagious diseases now in force in Ireland, and desires that similar regulations should be enforced by statutory enactment throughout the whole kingdom."

"That this Chamber regrets that the Select Committee of the House of Commons on the Malt-Tax has not made its report before the Chancellor of the Exchequer introduces the Budget of the present Session."

Mr. ANDREWS gave notice that at the next Council meeting he should move two resolutions: "1st. That the tax now levied under the name of poor's-rate to the extent of near ten millions annually bears unfairly on income arising from real property." "2nd. That exemption from the rate of income arising from personal property is unjust, and therefore requires the early and serious consideration of Parliament."

A vote of thanks was then passed to the Chairman, and the meeting separated after sitting upwards of four hours.

THE YOUNGER CHILDREN'S SUNDAY SCHOOL.

—This must be regarded as a simple orphanage, of which they are the temporary inmates. There must be no wearisome labour, no exhausting tasking of their young powers. They must, if possible, be interested, and unawares trained. There must undoubtedly be a perpetual flavour of the Lord's day everywhere—children's hymns sung to children's tunes, frequent changes of posture, easy Bible stories, simple Bible prints. It would be well if the presence of a garden gave the opportunity of transferring some even of this teaching to the lessons which might be learned from the lilies of the valley and the flowers of the field. The children ought, if the school has been a success for them, to be refreshed, not wearied, when the time comes for their going to the place of worship, itself commonly a trial to their young thoughts; if possible, when there, they should sit with their parents—children's benches are abomination. It is really astonishing, as well as utterly saddening, to think how commonly these little victims are exposed to treatment the exact reverse of all this; how they are seated on benches too high for their feet to reach the ground; drenched with dull lessons; expected to sit quite still, whilst it is as much a part of the nature God has given them to be perpetually moving every limb they have as it is the nature of the bumble-bee to buzz as he flies by us; how if, at the bidding of this their nature they fall into these incessant movements, they are scowled at by threatening faces, if they do not suffer from punishing fingers; how they are taken, wearied out already by unusual and inopportune teaching, to sit under a sermon which they cannot understand, and endure the unknown length of a service in which they cannot join. Surely many of the painful revelations made to us of the non-attendance of children on public worship for a day longer than they are compelled to be present at it, may be explained by the natural reaction which must follow such a mode of treatment as has been just described.—*The Bishop of Oxford in "Good Words," for April.*

THE POOR-RATE ASSESSMENT QUESTION.

At the last meeting of the Blandford Farmers' Club Mr. FOWLER spoke to this question. He said Poor-rates were first established in the reign of Elizabeth, and, in the words of the Act, were to be collected from every person according to his ability, and if that had been strictly adhered to up to this date the owners of real property would not have been so severely taxed as they are now, for all property would have shared this heavy tax. But at that time personal property bore but small proportion to real property, which was then the great wealth of the country; but as persons got more and more possessed of personal property, they endeavoured and succeeded by the aid of the lawyers of the day in getting personal property altogether relieved from this tax, for after much debating it was decided the words of the Act did not apply to personal property at all, and thus it has come to pass that Poor-rates, as they are misnamed, have been to a very great extent assessed on real property alone—i. e., on occupiers of the soil, houses, &c., not forgetting the clergy, who pay in many cases not much less than 20 per cent. of the whole of their receipts for Poor-rates, and I do hope in the agitation of this case that we shall have the strong support of the clergy in this great question. We also unfortunately know as overseers we have constantly to collect small payments it is true, but considering their position to them large sums, from the occupiers of cottages, many of whom are little better off than the paupers for whom these rates are supposed to be collected. I have been told that this is a landlord's question, and to some extent it is, more particularly at the exchange or alteration of tenancy; but immediately it is a tenant's question, for occupiers of the soil settle down in their places of business like tradesmen with a view to its being life-long, and proceed to act under that impression. And bad for this country will it be if that feeling is not continued, for it is absolutely necessary that the most may be made of the soil for the good of all parties and their common country. Occupiers of the soil are consequently not in a position to move about with every wind and wave, for their property is buried in the soil, and having once settled down under such circumstances they cannot run away from the alterations in their payments that are continually going on, but are obliged to meet them, although it was out of their power to have previously made any calculation concerning them. If the time should ever arrive when custom shall give them the right to deduct from their rents all these rates, then I will grant it will be the landlord's question; but I fear that time is not very close at hand, and we shall be trusting to a broken reed if we wait for it. We are all aware that out of these poor-rates have been paid the expense of all kinds of buildings, work-houses, police palaces, lunatic asylums, gaols, militia stores; and then come all sorts of other county expenses—the payment of the police to a great extent, general purposes, including prosecutions, highway rates, registrations, vaccinations, &c.; and now, I fear, are to be added shortly the present turnpikes and the education of the people; and, I ask, who has heretofore paid for all these purposes? Can it be doubted but that the great bulk of these payments has come from the pockets of the occupiers of the soil, not forgetting the clergy? If this is so, why are all these payments to be made and to be continued from real property, as distinguished from personal property? It will be well for us to consider what are the different proportions of property in the present day, not forgetting that personal is constantly increasing, for here are the great fund-holders of the whole world; but in this our little land, our soil is limited, and although constantly made more valuable cannot be increased in quantity. Real property as assessed to the poor-rate is valued at £99,638,403, from which was raised last year to pay poor-rates no less than £9,573,772; but from personal only a share of £384,478, or about 4 per cent. of the whole, this being the amount paid out of the Consolidated Fund under different headings, such as those of the payments made to the police for prosecutions, &c. I say a share of this sum, for it must be remembered towards those payments all who pay taxes contribute their respective shares according to the amount of taxes they pay through the tax collector. I

have just mentioned that £9,573,772 was raised last year under the name of poor-rate; but what do we find was expended for the maintenance of the poor? Less than half. The figures were £4,386,469; the remaining larger sum of £5,186,303 having disappeared for county, highway, and other common charges. No better proof can be required of the increase of this collection than the fact that during the last 26 years no less an increase than 33 per cent. has been added under the name of poor-rates, the figures having grown from £4,361,888 to those of £9,573,772, or in other words an increase of £5,211,944, the greater part of which is drawn from the occupiers of the soil who rent from the large owners. And how many do we find are owners of the soil to the value of £50 and upwards? Only 43,591 persons; but when I compare this number with those whose incomes from all sources are above £100 per annum, the comparison is small indeed; for I find—

Persons.	Per annum.	£
8,048 with incomes above £5,000	...	127,692,800
47,328 between £5,000 and £1,000	...	84,284,210
173,036 " £300 " £1,000	...	88,730,550
995,688 " £300 " £100	...	112,346,850

1,324,000 paying tax for incomes amounting to £13,954,000

Thus we find the income of this country of persons who thus pay their share of all taxes to be, in round figures, £413,000,000, or more than four times the sum assessed for poor-rates. I must confess that I see many difficulties; but I am unable to discover any good reason why the whole of this sum should not be made assessable for its share of the burden now called poor-rate. Have not the owners the same use of the source of all property—the labour market; the same use of the highways, the protection of the police, the use of the gaols, asylums, and the other various sources of expense that are annual but this poor-rate assessment? I would ask on what ground can the owners of one kind of property claim exemption from this payment? And then if we look into smaller matters, we find even real property does not all contribute its share; for woods, plantations, mines, shipping, quarries, and game if kept in hand, are exempt; though if the latter be let with the farms we know its value finds its way into the assessment, and here we have uneven positions not quite just. On what grounds are these exemptions? I hope if any one here before me can explain it he will do so. I know some whatever, nor have I read or heard any given that will stand the test of argument; it is simply a faulty law. I have always been of opinion that had our interest been properly represented and attended to at the time of the repeal of the Corn Laws, these undoubted claims of ours on the public would have been re-adjusted, for when especial protections were taken away especial burdens should have been removed; and now I see another chance of this desirable end being brought about, if farmers will unite for one common purpose, and become a real rope, making a good pull, a strong pull, and a pull altogether. Unfortunately, we have too much ease to know they are too often like the sand of the sea, composed of no adhesive properties. But let us one and all combine, and keep this great question before the eyes of the community, more especially the small ratepayers in boroughs, to whom these rates are a source of burden, and constant annoyance. We should then succeed in impressing it on the representatives in Parliament: they would be obliged to consider this question, or give way to those that would. For this is a great question, and not one that can be pooh-poohed; it is one that so affects the class that are lately made voters, they would be sure to support those only who would endeavour to help them, and give relief from this burden. Prove to them by figures these payments would be reduced from about 4s. in the pound to 1s. in the pound per annum, and their support will surely follow, for no argument is so strong with John Bull as the one that dips more or less into his breeches pockets. I have thus far spoken of the question in a general way, but let me add a few

observations of a local character. We too well know rates are increasing year after year, increase of pauperism and other expenses increase with wealth and population, and over a large proportion of the expenditure we have no control whatever, nor have the magistrates so much as is generally supposed. At our guardian meetings there is much done not quite what we wish; but at the same time we are powerless, and the same remark will apply with regard to our Highway Boards. We should like to be more liberal to the aged and the sick poor; but we have a duty to perform towards the ratepayers, many of whom we feel in our hearts ought not to be called on to pay poor-rates. Do we not feel when assessing small cottages that we are compelled to do an act legal but very repugnant to our feelings and ideas of what should be the law. As I observed some one remarking the other day—Do we not feel we are robbing Peter to pay Paul? Should this be, in this great and free country? And then again with the highways; little did we think, when these were quietly saddled on us in their present way, the vast amount that would be expended, having ourselves but little control over it, though we find to our cost whence comes the money. In this county the payments last year ran up to the figures of £23,000 in round numbers. I was much struck, when looking at these returns, to see the difference per mile charged for common charges in different unions. I know much of this may be explained; but the difference between 18s. 8d. per mile and £1 12s. 2d. is so great that I think it requires examining, for the latter I should have supposed would have been nearly enough to give tolerable roads throughout the county; but, unfortunately, we find the average to be given at £10 18s. 11d. And then there is the police force, a most expensive one, that has about doubled our county rates. Who will be bold enough to say we reap an adequate good? Over this payment we have no control; and what interest has real property in this force, that is not shared by the community owning personal property? This being the case, I cannot but conclude that the millionaire with his funded, share, and bonded property, should pay his proportion of poor-rates, in the words of the Act of Elizabeth, "according to his ability." It is not for me to point out how this desirable end could be carried out, for I feel assured, if the fact is proved to the minds of our community and established, ways and means will be found to adapt themselves to the altered circumstances of the times; and if ever there was a time to press this question on the Government it is the present. You know this question has been, and is being, discussed through the length and breadth of the land; Chambers of Agriculture are being formed through the whole of our counties, with a Central Chamber in London. These have been joined by many of our first-class men, one of the local Chambers having for the vice-chairman no less a person than

the present Chancellor of the Exchequer, through whom we can get our position brought before the Ministry until a Secretary of Agriculture shall in that Ministry take his place; and, with proper organisation and preparation, there is good cause to believe that this subject can be so brought home to the understanding of the people in general, that through the majority of the new class of voters our representatives will be those only who support this question in Parliament, whether they be followers of Disraeli or Gladstone; whether they be Whig or Tory, Conservatives or Liberals; in fact by whatever name they may be called. Few will object to the poor receiving an education suitable to their position, and at little expense to their parents; but that education is intended to raise people above labour, as is too commonly supposed, is altogether a fallacy; for we are told on the best authority that the poor shall always be with us, and that man shall live by the labour of his hands and the sweat of his brow, and if there is any class worthless it is that one that knows no kind of labour. I cannot but see that the poor are already well provided for in our country districts, as far as education goes, by the labours of the clergy, and the munificence of their richer neighbours; but it is a sad fact this does not apply to large cities and towns, where thousands are brought up in ignorance and vice, much to the injury and disgrace of our country, and against the wish of all true Christians. Then follows the question of expense, and how it is to be met. I have heard and read many proposals having more or less weight; but the unfortunate poor-rate is the most likely to have this additional burden of educating the people. I find at present from returns I have seen, that 5,167 parishes get the assistance of Government in educating their poor, and that 9,710 other parishes are without such help. Can there be any argument with weight used why all property should not share this expense? Have not all the community an equal interest in getting our poor educated and made good Christians, as I am happy to know many of them are? It appears to me there are all questions to be dealt with for the good of our common country, and the expense of which should be paid out of one common fund under local control. That can only be raised by making all property rateable for the purpose, and thus every man will have to contribute according to his ability, position, and circumstances in life.

The discussion which followed went merely to support the opening address, and it was resolved that Mr. Flower should take an early opportunity of learning the opinions of the county members on the question; and that Mr. Flower, Mr. Mitchell, and Mr. Fowler be appointed to represent the club at any meeting that may take place with others similarly appointed from other districts, to consider what other and further steps it would be desirable to take to forward this movement.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The monthly meeting of the directors was held on the 1st of April; Mr. Stirling, of Kippendavie, and afterwards Mr. Walker, of Bowland, in the chair.

It was reported that at a meeting of the Council on Education, held on the 15th of March, the Society's diploma in agriculture had been conferred on Mr. Thomas John Elliot, Wilton, Salisbury; and the certificate on Mr. James Taylor, Allan Vale, Fitzmexton, Aberdeenshire.

Wednesday and Thursday the 15th and 16th current were named as the days for the examination of the students attending the Edinburgh Veterinary College; and it was resolved to award silver medals, as on former occasions, to those who pass the best examinations in anatomy, physiology, cattle pathology, horse pathology, chemistry, materia medica, and best general examination.

The Secretary was instructed to announce that the plans and specifications for the Aberdeen show-yard would lie for the inspection of intending contractors at the Society's chambers, No. 3, George IV. Bridge, and at the office of the local secretaries, Messrs. J. and R. Ligertwood, 67, Union-street, Aberdeen, after the 6th current.

There was laid on the table the draft of a letter to be addressed to the conveners of the counties connected with the show, in regard to the appointment of the General Committee of Management; and the number to be returned at the 30th of April meetings was fixed as follows:—Aberdeen, 20; Banff, 15; Kincardine, 15; eastern division of Forfar, 15; besides the lords-lieutenant, vice-lieutenants, conveners, and members of Parliament, who are members *ex officio* of the committee. The number from the city of Aberdeen was arranged to be 20, and from the Royal Northern Society, 15.

The Secretary was authorised to forward to the conveners of the counties embraced in the district of the Edinburgh Show (the three Lothians) a list of the classes of stock, and to express a hope that the support which has been given on former occasions will again be afforded.

It was intimated that the lecture by Dr. Anderson on "some of the relations of the plant to the soil," which was unavoidably postponed on the 18th of March, would be delivered in the Society's Hall, on Wednesday the 8th current, at two o'clock.

THE POTATO TRADE.—THE LONDON MARKETS.

BY A PRACTICAL FARMER.

In my last paper on Potato Planting I endeavoured to show the fallacy of Mr. Maw's experiments as a whole, and to point out some of the popular modes of planting and manuring for the potato crop. I now pen a short paper upon the Potato Trade as carried on in connexion with the metropolitan markets. Of the precise markets or their sites I have nothing to say; they are very eligibly situated in proximity to the places of delivery and the requirements of the trade. Tooley-street and Waterside and Borough Markets take much of the imported cargoes; the Great Northern Market is exceedingly convenient for the immense supplies brought up by the Great Northern Railway; the Spitalfields Market is within convenient distance from the Great Eastern Station; the Covent Garden Market is chiefly supplied as a general market for consumers, but has considerable connexion with the Midland and Great Western Railways and others. These are the great emporiums for potatoes, and the business that is transacted there is astounding. The consumption of potatoes in London and suburbs is enormous, and is producing a new feature in agriculture. The growth of potatoes is gradually on the increase, notwithstanding the enormous losses from disease; and many improvements in culture, in manures, and in the varieties grown have been introduced. The potato-growers have to a great extent succeeded in producing tubers of the best quality in untold quantity; they have achieved wonders; and experienced growers are now able so to adapt their culture, their manures, and precise variety of potato to their soil, as to ensure an immense crop of the finest quality, barring disease. I hesitate not to say that the cultivators have done their part admirably, regardless of cost, and deserve every encouragement to provide such a substantial and wonderful supply of excellent food for a nation's welfare, and would supply them at a more reasonable price, provided the trade in all its bearings is properly conducted.

It is upon this trade generally that I propose in this paper to treat, because the public are severely mulcted in price without advantage to the grower. The first thing I shall name is the "dressing" of the crop for market, and in this the consumer is to blame. A certain standard of quality is insisted upon, hence great waste of good eatable potatoes is inevitable; they may not look so nice and of so uniform a size in the potato-dish, but if more of the smaller and more of the larger or out-grown tubers were permitted to pass as saleable, many thousand tons more would go for human consumption, instead of "to the pigs." At present "the ware" must be admirably dressed to reach a high price; the smaller tubers being shaken through sieves (riddles) having meshes from 1½ inches to 1½ inches wide, and all the big and misshapen ones are cast out. Occasionally in a bad year, when potatoes are grown generally small, a 1½-inch sieve is admitted to dress for "ware." In passing, I would say that the siftings are again dressed through sieves with smaller meshes, called "chat sieves"; the tubers passing through are called "chats," and sell at a very inferior price; those remaining in the sieve are reserved for seed, together with the imperfect or misshapen and green ones. It is this "ware"—these well-dressed potatoes only—that are regularly sold for consumption.

The next thing I shall name is the cost of freight and carriage up to London. Railways so intersect the country now, that but few cargoes are shipped to this market;

but when they are so shipped, it is at a much lower rate than by railway. Any of our railways will take a truck of cattle or sheep at a much lower rate than a truck of potatoes, and they will charge as much for a truck of potatoes as for a truck of corn, or nearly so. There ought to be some consideration as to value; potatoes ought to be put more upon a par with such heavy stuff as coal, lime, stone, gravel, &c. This question should be taken up by growers in good earnest, and urged upon railway authorities.

There is another crying grievance connected with the transit of potatoes by railway: It is the petty pilfering by the way. I say pilfering, because the losses in weight delivered into the truck cannot be accounted for in any other way. It is no uncommon thing for a truck loaded with from five to six tons to fall off in weight upon delivery from three to five hundred-weight. It is customary with growers to allow one or two pounds per sack over-weight for waste and loss by drought in travelling by rail; but that does not suffice. It has become a crying evil; complaints are universal; something must be done. Is it all the fault of the railway officials, or do the potato-salesmen's servants come in for their share of the misdeeds? We are the sufferers. All first-class stations possess weighing-machines; could not the authorities be compelled to weigh each load as it is brought to the truck, and give the sender a pass-note engaging to deliver the quantity and weight sent to its destination, barring accidents. This would speedily lead to a closer supervision of their minor officials; at present we lie at their honesty, and many trucks give evident proofs of their intermeddling in a small way.

The next thing I shall notice is the high commission and heavy expenses charged by the salesmen. The commission charged by universal consent amongst them is 6d. per sack of two cwt., be the price high or low. It is certainly less oppressive just now when prices are high; but take an average of years, which will not exceed 7s. 6d. per sack, and how does the account stand? Why something like this—i.e., carriage 1s., working 1d., commission 6d.—1s. 7d., leaving for net produce 5s. 11d.; thus making the commission amount to a heavy per-centage. Corn factors charge 2½ per cent. per qr., cattle salesmen 8s. 6d. for a fat ox, sheep salesmen 6d. for a fat sheep, and wool factors 2½ per cent. per tod. The farmer does not pay such a high commission for any other part of the produce of his farm. It is true he may sell to the potato-merchant at home, and so he does; but why should he not have the advantage of the best market as well as the merchant. It is this commission, these costs and losses, that prevent him.

The last point I shall here dwell on is the great speculation in which these salesmen indulge in the purchase of potatoes. Individual salesmen will buy many thousand tons or hundreds of acres. This may be all right in itself, but it is not the legitimate commission business; growers should be cautious; salesmen who have large stocks of their own will naturally favour themselves first. If respectable salesmen could be found who would undertake sales at 2½ per cent., and pledge themselves to a commission business only, they would soon secure the bulk of the potato commissions. I again repeat the culture of potatoes is increasing to a very large extent; and it is highly expedient that the trade be put upon a right footing.

FINANCIAL BOARDS.

There can be little doubt but that the proposal for establishing County Financial Boards has been somewhat reluctantly brought before the Central Chamber of Agriculture. There has been a very manifest disposition in certain quarters to keep the question at arms'-length; and it is just possible that but for the determination of the chairman the matter might have commanded but little attention as yet. This is the more remarkable, as the agitation is by no means one of yesterday. The Farmers' Club has considered and recommended the adoption of the principle involved again and again; while more recently the local Chambers have very properly made this a leading feature in their proceedings. Still, however, with a brace or so of Bills before Parliament, no signal was made from head-quarters, and had Mr. Wyld's measure come on in its turn, a discussion in the House would have actually preceded any demonstration from what should be the political organ of agriculture. As it was, any such item on the Agenda was put very low down, with a kind of *pro formâ* invitation to the local Chambers to do what they had been doing pretty much already; and we must confess that the debate consequent thereon has a deal more stuff in it than could have been expected, or was perhaps ever intended. But there could be no difficulty in arriving at the dead lock of the occasion. At the very first available opportunity almost the only member of the upper house in the room would, if he could, have substituted *nay* for *aye*, and have had it proclaimed that "in the opinion of this Chamber the establishment of County Financial Boards is *not* highly desirable." Another gentleman of title would have shelved the subject with something sufficiently vague and general, and that so far met the views of the noble lord, that he at once seconded it as an amendment, which, had it been carried, would have been virtually the death-blow to the Central Chamber of Agriculture. Fortunately there was no other man at the meeting who could be brought to think with these two dissentients, and the Chamber stands at last committed to the necessity for Financial Boards, as it will now proceed to analyse the new Bill.

It is to be regretted that this step had not sooner been determined on, particularly with the special object of the Chamber to deal with measures before Parliament. And, indeed, immediate action in this instance would have been the more desirable, as the Bill appears to require thorough revision and amendment. Its provisions are tediously elongated, while it is weakly drawn; and there is, in fact, little or no force of application about its intention. This would surely have been just the sort of thing for a congress of practical men, sufficiently alive to their own stake in the country, to have dealt vigorously with in the outset. Whereas by the time the opinions of the corresponding Chambers have been collected and digested, it is probable that the Bill will have been brought before the House and its many weak places shown up, the more especially by a certain "set" in the Country Party long known to be adverse to any such a division of power.

Lord Berners may be regarded as something of a representative man here, and it may be politic to gather from his own manifesto the character of the objections likely to be raised. His lordship "rejoices at the co-operation and kindly feeling between magistrates and occupiers in boards

of guardians, highway boards, and other local bodies." Precisely so; the two classes have been found already to work so well together, that a very strong precedent may be considered to be established for still further extending the system. But Lord Berners, not very logically nor even consistently, when we bear in mind his "rejoicings," comes to a directly contrary conclusion. The co-operation and kindly feeling between owner and occupier have proved so far so good, that—he would have no more of it! Such reasoning reminds one rather of Touchstone's banter than really serious argument:—"in respect that it is a shepherd's life I like it very well, but in respect that it isn't a town life I don't like it at all!" Or, by our more modern reading, "in respect that co-operation has been mutually beneficial I like it very much, but in respect to managing the general funds of a county in this way I don't like it at all!"

It will be only fair to go a step further and ascertain the cause for so curious a contradiction as would seem to be here involved. "The magistrates," then says Lord Berners, "were responsible for the peace of the county. They were also responsible for the public buildings being of a permanent and useful character. The greater proportion of the magistrates were owners of the soil, and were responsible for the general and permanent interests of the country; while the occupiers, generally speaking, were not in the same position. He remembered that when alterations were being made in gaols, and a new system was being introduced, there was a great cry against the extravagance of the magistrates; whereas in fact all the work was executed under the authority of the Government. It was simply because magistrates had a permanent interest and tenant farmers generally had not, that he was opposed to this alteration." Of course the main point here is that the greater proportion of the magistrates, as owners of the soil, have large and permanent interests, whereas the occupiers have not. But is this so? Is it not a fact, rather, that a greater proportion of the county magistrates are not large landowners, but rather younger brothers, clergymen, and "gentlemen," as so distinguished, living on limited incomes? And, moreover, these are precisely the sort of people who, having little else to do, are apt to take a lead in county business, and to play at spending other people's money. Having but little experience, however, in managing any affairs of their own of any great moment, it by no means follows that they are the best men for the place, and with little or no actual responsibility for what they do, they can generally afford to be generous—will build and alter without ever raising a remonstrance, and ensure the peace of the county by doubling the police and multiplying the pheasants. But Lord Berners was answered at the meeting, and by none more promptly or ably than Sir Mordaunt Wells, who, as he said, took much higher ground: "The ratepayers were entitled to be represented; the man who had invested thousands in his occupation ought not to be overlooked. This was not a landowners' question—it was a ratepayers' question. Moreover, when a man had embarked his capital in a thousand acres of land, he had, in fact, a permanent interest. He could not afford to lose his capital: his own interest and that of his family bound him to continue to occupy the farm as long as he could; and it must be a very good reason that would induce him to give it up. This was not a landowners' question, but one bearing directly on the interest of those upon

whom the burden was imposed; and when Parliament looked to the sources from which the taxation was derived, it would no doubt arrive at a sound conclusion as to the persons who ought to be represented."

It will be seen from the official report, that his Royal Highness the Prince of Wales has accepted the office of President of the Royal Agricultural Society of England for next year. Mr. Dyke Acland has given notice that he will, in his place in the House of Commons, "call attention to the inconvenience arising from the want of an authority specially charged with the duty of considering questions affecting agriculture and the food of the people, and move for a committee to examine and report on that subject." To those who can read the times aright, all such matters as these point in the same direction. The importance of the agricultural interest is coming more and

more to be admitted; and we may have a Board of Agriculture, as well as County Financial Boards, if we only take the trouble to move for them. But has the Chamber moved here, either? Has it ever made any official announcement on the necessity for that Government authority for which Mr. Acland and others have been asking? It would be absurd to suppose that any great point can be carried without encountering some opposition, or riding down the prejudices of a few. But when we choose the rather to wait until these die out of themselves, we are simply losing our opportunity; and there is a caution conveyed in the speech of Sir Mordaunt Webb that deserves to be studied. The way from local administration to an office in Whitehall should be clear enough; and to be worthy of its object, it is by this road that the Chamber must travel.

THE HIGHWAY ACT.

At the Worcestershire Easter Sessions, on Monday, April 8, as usual on previous occasions when the Highway Act has been debated in Quarter Sessions, the galleries and floor of the court were crowded with representatives of the agricultural interest from all parts of the county; and as the opinions of the various speakers harmonised or disagreed with those which they had formed on the question, they were not backward in expressing their assent or dissent. Lord Dudley's arguments in favour of the confirmation of the provisional orders were silently received by the agriculturists, whose attention, however, was enchained by the noble Lord during the whole of his address. The Hon. C. G. Lyttelton's explanation that the Lord Lieutenant did not wish to force the Act upon the ratepayers if they were dissatisfied with it was evidently satisfactory to the farmers. The agriculturists found their leading champion in Earl Beauchamp, who, amidst continued applause and a running fire of "hear, hear," maintained that the antagonism to the new Act was so decided and so general, that it was impossible it could work well. The noble Earl's logical speech, in moving the amendment, which was loudly cheered at its close, was followed by an equally convincing address from Mr. E. P. Amphlett, who said the new system had not yet been properly tried, and contended that the old system worked well when properly managed. The Rev. J. Pearson followed on the same side, as did Mr. Winn Knight, who may be said to have earned the title of "the farmers' friend" in connection with this and other measures. Of the other speeches, Mr. Hemming's was thoughtful and argumentative, as was also Sir H. F. Lambert's; whilst Mr. Whitaker spoke strongly in favour of the amendment. The debate began at noon, and did not terminate until nearly six o'clock, when the success of the amendment, by a very small majority, however, was greeted with enthusiastic cheers from the farmers.

The CHAIRMAN (Lord Dudley) moved that certain provisional orders made at the Epiphany Quarter Sessions, 1866-7, for the formation of the Halesowen, Bromsgrove, Densitish, and Pershore districts should be confirmed.

The Hon. C. G. LYTTLTON said it was with great reluctance that he seconded the motion.

Earl BEAUCHAMP moved "That it is inexpedient to proceed with the formation of new districts without further experience of the working of the new system."

Mr. R. P. AMPHLETT, Q.C., seconded the amendment.

Mr. WINN KNIGHT, M.P., referred to the experience he had gained from his father as to the improvement of the Kidderminster roads under the old system, and said the roads were so good in all directions that there was little for the new Board to do. He also alluded to his own experience as to the improvements effected in other parts of the country, and expressed his belief that the success of the old highway system had been very great indeed. He thought the introduction of the new system was owing to the wish to centralise everything rather than to the want of improvement.

The Rev. H. G. FAUSSETT expressed his opinion that the

discontent which existed was due to the indecision shown by the Court throughout this matter. They make their desire to conciliate the ratepayers too apparent, and if the Act had been put in force at once it would have been taken to as a matter of course. All agreed that the Act had not been well managed in this county, and he set it down to over-anxiety on the part of the Court to make things smooth. They were in as degree answerable to the ratepayers for any decision hastily arrived at, and it was useless to have censured the ratepayers when they had no voice in the matter. He concluded a long speech, during which he was several times interrupted by those impatient for a division, by hoping that the Court would adopt a motion which would set the matter at rest for ever.

Mr. G. WHITAKER said if anything should induce them to vote for the amendment it was the speech just delivered, in which there was a total want of respect for the feelings of the ratepayers. He hoped Mr. Faussett was alone in holding that the Court should exercise the power it possessed despite everything which might be urged against it. He believed from the bottom of his heart that the measure was prejudicial to the interests of the landlords and tenants (Hear, hear). There had been a deal of special pleading, and the Chairman had made an able and ingenious speech, but he evaded the real question altogether. It was easy to find fault with old systems; and there had been many abuses under the old highway system, but he had yet to be convinced that the new Act was an improvement. It was inconvenient, unnecessary, recalled for, and expensive; besides, it destroyed the principle of self-government. Within the last thirty years the roads had been greatly improved, and the farmers were now too intelligent to allow the roads to fall into decay. No doubt the formation of highway districts would pave the way for the turnpike roads being thrown on the ratepayers. The maintenance of local government was of vast importance to farmers and landlords, and the new system had a strong tendency to overturn it (Hear, hear). It was nothing but justice that those who advocated changes of principle should show that they would lead to improvement. With all to-day's special pleading it had never been shown that the pattern district, Kidderminster, had saved in four years, out of an expenditure of £4,464, £184, but such a trifling matter as that would not justify the imposition of the Act upon four unwilling districts. There had been a decrease of expense in 26 parishes only out of 139; the decrease varied from 25 to 60 per cent., while the increase in the 113 parishes varied from 35 to 300 per cent. It was all very well for Earl Dudley, with his income, to talk about a penny in the pound, but it was a matter of some importance to small ratepayers. The ratepayers were justified in calling on the Court to keep down the county expenses; the burdens placed on the farmers would soon become intolerable, and instead of magistrates sanctioning a measure which increased the rates, it was their interest and duty to support the amendment. After remarking on the expense and dissatisfaction which the Act had caused in other parts of the country, Mr. Whitaker submitted that the Court would not lose its dignity by yielding to the wishes of the ratepayers,

and he called upon them to get rid of an injudicious and vexatious measure rather than disturb the peace of the county (applause).

The noble CHAIRMAN replied to the arguments which had been brought forward against the confirmation of the provisional orders.

The Court divided, with the following result: For the

Chairman's motion to confirm the provisional orders, 39; for Earl Beauchamp's amendment, "That it is inexpedient to proceed with the formation of new districts, without further experience of the working of the new system," 43. The amendment was therefore declared carried by a majority of three votes, the result of the division being received by the farmers with long and loud-continued cheers.

PREPARATORY GREEN CROP CULTIVATION.

The basis of successful farm produce during any specific rotation depends altogether on the proper preparation and manipulation of the land for green crops: without attention to it the work is never satisfactorily performed for the production of the after-crops. The old system of husbandry necessarily insisted upon summer fallowing. Farmers knew from practical experience that arable land grows foul with weeds and exhausted during their rotation, and that it could not be cleansed, enriched, and restored to fertility without putting it through a process of thorough pulverization to enable them to clean it, and that it involved the necessity of dry weather to effect that purpose, and, therefore, that the land must be given up for a season and left uncropped. Thus the land got rest; the frequent ploughing of it up and harrowing pulverized and aerated the soil; the root weeds, exposed to the drying influence of the season, were killed; and the seeds of annual weeds which lay in the ground sprung up, and were in turn ploughed down to rot, and enrich the soil they were robbing. During the process of fallowing, the worn-out and exhausted soil was also enriched by the application of lime, marl, or farmyard manure, which, by the frequent stirrings by the plough and harrow, were thoroughly mixed and incorporated with the earth; and it became fit for the production of wheat and other grain for another period of exhaustive cropping, till it was found necessary to give rest, and undergo the process of another summer fallow; and thus it went on, to the end of the chapter; the loss of a year's rent, and the expenses of a bare summer fallow—no inconsiderable item—having to be borne by the aggregate crops cultivated during the period allowed between the several summer fallows, till Jethro Tull aroused the farmers from their lethargy, and pointed out a mode by which all the advantages of a bare summer fallow could be obtained without the loss of a crop, but, on the contrary, at the same time produce a crop that would not only pay the rent and expenses of cultivating it, but leave a considerable surplus also.

Tull was the first English farmer to advocate the great advantages derived from drill husbandry, deep cultivation, and a thorough pulverization of the soil, which has, since his time, done so much in the advancement of agricultural knowledge, and the combination of practical skill with the science of agriculture of our times. But the lessons that Tull taught are too frequently lost sight of; for though modern farmers have adopted drill husbandry, we regret to say that in too many instances they do not combine with it to its proper extent the fallowing system, so as to pulverize and aerate the soil as much as it should be: it is habitually neglected from one cause or another, and disappointment is the result, by sowing the seed on the crude, ill-digested earth, leaving turnip seeds particularly to the tender mercy of the fly, from want of that fine pabulum so necessary to their quick germination and growth, which pushes them on out of reach of their enemy.

Whatever excuses may be made in times gone by for not pulverizing the soil to the proper depth to render it sound and nutritive for plants, there can be none now-a-days. Tull's drills, hoes, and other implements have been so much improved by the practical and scientific skill of the great manufacturers of the present age as to leave the practical farmer no excuse for neglecting the thorough pulverization and preparation of the soil for any crop: by the aid and timely use of the implements and machines of the present day he can do more in an hour, and do it a thousand times better too, than Tull, the father of drill husbandry, could do, and at comparatively much less cost.

We have constantly insisted upon the great necessity of autumnal cleaning and deep cultivation. The first is cheaply and rapidly done by the use of Bentall's broadshare, which

may be set to cut the stubble and weeds from 2 to 6 or 8 inches below the surface, without reversing it; a few days of dry weather after this is done serves to kill all the weeds so cut, and the application of the harrows brings them to the surface, where they can be gathered by the horse-rake in rows, and carted off the field; immediately after which the plough should be set to work to turn up the soil deeply and roughly, and leave it fallow all the winter, to be acted upon by the alternate frosts, thaws, wet, and droughts of the season. The land requires no further application of the plough; but as soon as dry enough in the spring, the timely application of good harrows, grubbers, and rollers will produce in the generality of soils a tilth that cannot be excelled by any other implements. Occasionally, and in some aluminous or clayey districts, lumps are to be dealt with, that harrows, grubbers, and rollers have but little effect on, except they are allowed first to get baked, so as to be thoroughly dry, and then a chance shower of rain will slake and pulverize them, but that involves loss of time; but by the alternate aid of Crosskill's or other clod-crushers and harrows, those obdurate lumps are quickly pulverized and reduced to powder. The Norwegian harrow also, an improvement on Tull's spiked roller, has a most powerful effect in reducing obdurate soils. Its action is quite different from that of Crosskill's clod-crusher, its long spikes not only penetrate the lumps, splitting and dividing them, but in coming out of the ground again it loosens the soil, and acts the part of a grubber, each set of rolling spikes lifting weeds and lumps to the surface, to be again acted upon by the companion rolling spikes, so as to produce a loose, pulverized, friable bed of earth, to the full depth the spikes have gone. Other clod-crushers only deal with the surface, and by their weight consolidate the under strata, and are of the greatest value in preparing the land for grass and clover-seeds, broadcast-sown turnips, or flax; but for potatoes, turnips, mangels, or other green crops to be cultivated in drills, there is no implement to be compared with the Norwegian harrow in preparing and pulverizing stiff, clayey land for drilling.

The drills may then be opened by either the common or double mould-board plough in the most satisfactory manner, the manures deposited and covered, rolled with a light roller, and the seeds of turnips or mangels drilled in, which vegetate speedily when deposited in fine mould, which presses closely round the seed, to the exclusion of dry, harsh air, instead of lying dormant for weeks, as so frequently happens when the seeds are deposited amongst hard, chopped earth, which admits the parching air, drying up and extracting every particle of moisture.

Seeds of all sorts have a natural and powerful affinity for moisture: they cannot for a moment remain in contact with moisture without absorbing it, by which it gradually swells, and soon bursts its integuments. It is, therefore, an important object to deposit the seed while the earth, after being freshly stirred, retains its natural sap; and for this reason the land should be sown as fast as it is prepared. The afternoon is the best time to do so: evaporation ceases. During the night the seed absorbs its food from the damp earth, and will be considerably swollen before morning, and, if closely entombed in fine earth, will not readily part with it; so that the great object of the farmer should be to seize the golden opportunity as it comes, and deposit his small seeds the evening of each day, as fast as the land is prepared for their reception; in fact, all the operations of opening the drills, depositing the manure, covering in, rolling, and sowing the seed should rapidly succeed each other, allowing as little time as possible for the sun and parching winds to rob the land of its natural sap or moisture.—*Irish Farmer's Gazette*.

COTTON CAKE.

At a recent meeting of the Newbury Farmers' Club, Dr. PALMER, of Speenhamland, read the following paper:—Mr. Chairman and Gentlemen,—The plant which furnishes the cotton pod is the *Gossypium* of botanists, but belongs to the mallow tribe. Some of its species are herbaceous (even annual), as the cotton herb; and others more or less woody, as the cotton shrub and the silk cotton tree, which frequently attains the height of from 10 to 20 feet. The cotton of India and the United States is the herbaceous kind; that of the West Indies, Brazil, and partially of Egypt, the shrub cotton. The tree cotton flourishes in Borneo and other tropical climates, in a wild state, but is little known as a commercial product; but I think might be introduced for the production of cake, as the seeds are large and numerous. There are many kinds of cotton in the market, and derive their names from the places to which they owe their origin; hence that cultivated the farthest north in Europe, near Naples, is called Castelmare; but the most esteemed are the Sea Island, from the neighbourhood of Charleston and the Savannah, and that raised from the same seed, such as the Georgian, South Carolina, and New Orleans; but the finest ever introduced was from the Island of Tobago. India can produce at least half of what we require, Italy one-fourth, and Egypt and Algeria the remainder. The Indian cotton is excellent, when due care has been taken; but from the great distances it has to travel in bullock waggons, it is often injured by dirt and weather. India exports twice as much to China as she sends to us. Of late years cotton has been largely cultivated in Egypt, and might be grown at Natal and in Australia, as it has been in the Fiji Islands; so that it is probable that before the United States can supply us as formerly, other countries will be able to compete successfully with them. The fruit of the cotton plant is a capsule, and opens with several valves, and contains many seeds, the numbers varying in each pod, some containing 10 or 12, and others as many as 30; but in all the varieties there is a marked difference in colour, shape, and size. These are covered with a long, close, white, or somewhat yellow pubescence; and this latter colour, unless produced by accidental moisture or an inclement season, is indicative of greater fineness, and is characteristic of the Georgian cotton. This pubescence is closely compressed in the capsule, and is the cotton of commerce. When examined under the microscope it is found to consist of tubular hairs, which arise from the surface of the seed coat, and which here and there have joints. Cotton which has undergone no preparation is called raw cotton. It may not be trying your patience too much, gentlemen, if I speak briefly of the sowing and harvest seasons. This, of course, differs much in the different climates; for instance, in the south of Europe it is sown in April and May, and gathered in September and October. The herbaceous, as before stated, is the most generally cultivated in Europe, and even in other countries. It is an annual, and seldom exceeds twenty inches in height. In the Levant (where the seeds are eaten as food) it is sown in March, the seeds being laid in rows at about three feet apart, and patches of seed two feet distant in the line. When the plants have attained a particular height they are thinned out and snapped off with the fingers, to make them produce several shoots, and consequently more numerous flowers and capsules. After they have been thinned out to two or three in one place, the earth is stirred-up by a one-horse plough, or by hoes, and carefully irrigated, the water being directed into furrows between the rows. Careful weeding is necessary to secure a good crop. Observers speak enthusiastically of the extremely beautiful aspect of a cotton field in autumn—the dark green leaves, the large yellow flowers, and the snowy cotton protruding from the half-opened capsules, for the plant bears ripe fruit while it is still in flower. Thus the gathering goes on for some time. This is simply done by picking off by the hand the capsules as they begin to open. After drying them, the cotton is next separated by means of an apparatus composed of two or three wooden rollers of about an inch in diameter, ranged horizontally, close and

parallel to each other in a frame; at each extremity they are channelled or toothed longitudinally, corresponding one with another; and the centre roller, being moved by a foot-lathe, makes the other two revolve in a contrary direction. The cotton is laid in small quantities at a time upon these rollers, while they are in motion, and, readily passing between them, drops into a sack placed beneath, leaving the seeds behind. In China the same is effected by a handmill, consisting of wooden or iron horizontal spindles, which, revolving very quickly, catch the fibre, and drag it through, so that the fibre is twisted round and round, until all the fibre is pulled off, and the seed left behind. Owing to the enormous quantities of cotton produced, there is ever an abundance of seed, and even now large quantities are annually destroyed, as there is far more than is requisite for the crop of the succeeding year. This the Chinese, instead of throwing away, have utilised, and for centuries (for cotton is supposed to have been introduced about the 9th century) have extracted a dark and thick oil, used in their common lamps. It makes, however, much smoke, and is employed largely by the makers of Indian ink or common Chinese ditto, to produce the lamp black. This they mix with sundry infusions of plants and ass-skin size, which gives it a shiny appearance. The meal left after the expulsion of the oil they largely use for fattening cattle, and also as a valuable manure. For the latter purpose they use likewise a white bean, from which the oil has been expressed; they speak of it very highly, but I have been unable to procure specimens. The cotton cake is prepared at their oil mills, which are very large establishments, always at work. In some of them as many as 50 bullocks are kept to perform the work at the stone wheels. In all the processes detailed, you will notice that the cotton fibre is carefully separated from the seeds. To show you how prolific the cotton plant is, I may just add that when it has been left to grow wild, the number of pods counted on a plant in July amounted to 700, and as the Fiji cotton brings forth ripe fruit without intermission during the year, double or treble may be looked for as the annual crop. Twenty pods of cleaned cotton weighed one ounce; thus each plant would yield 2lbs. 3oz. An acre, it has been computed, would hold 222 plants, yielding at the rate of 2lb. 3oz. per plant, and gives 485lb. 10oz. of cotton. It is now some years since cotton cake was introduced into this country, and there seemed to exist a very considerable prejudice against its use, and justifiably so, as the first importation was in a half-spoiled state when given to animals, and being inferior and crude from the method of making it with the whole seed. A great deal of this inferior cake is still made, and I shall be able to lay before you some striking examples. Of cotton cake these are many varieties in the market, but those best known to agriculturists are the following: viz., Thin decorticated cotton cake, thick ditto, ordinary cake made of the whole seed, and the oil meal or kiln-dried oil meal. Of these the best and most valuable, undoubtedly, are the thin decorticated cake and the oil meal or kiln-dried for feeding purposes. I do not think I should be justified at a meeting of this character, if I entered into an elaborate account of the various analyses of cotton cake. Sufficient for our purpose, if I state that decorticated cotton cake contains a very high and much larger per-centage of flesh-forming matter than linseed cake. This suggests that it may be given with great advantage to young stock and dairy cows. As by far the largest proportion of nitrogen of food passes away with the excrement of animals, the dung produced by stock fed upon cotton cake will be found to be particularly valuable. Cotton seed contains a considerable quantity of the earthy phosphates, such as the phosphate of magnesia, lime, potash, and other sorts of potash: even for the purpose of supplying bone material to the animals, it is necessarily a valuable food. Dr. Voelcker, to whom I am indebted for much practical information, says that the decorticated cake is far better and more economic food than the ordinary cake, which he considers as quite unfit for feeding purposes. Again, decorticated cotton

cake and oil meal, in comparison with all other kinds of artificial food, are decidedly cheaper feeding materials, and will be long laid that favour that a really valuable and cheap article is sure to command. Since the outbreak of the American war, decorticated cotton cake is now rarely seen anywhere, and none of good quality has been sent to England. In 1866 there was imported from France and Belgium 16,060 tons of cotton cake, valued £83,013. Oilcake, unless previously dried and kept in closed bottles, will not keep well in our damp climate, and hence the difficulty of preserving large specimens. To Dr. Voelcker I owe many thanks for the examples I have now to lay before you. These were accompanied by some valuable and instructive notes. He says: "I have kept a few bits of best decorticated cotton cake; it is now about eight years old. I send you two bits of them, together with some others that you need not return. When I first got the yellow decorticated cotton cake, it was as bright yellow as mustard, and as sweet as a nut. In the course of time the colour gets darker; still, even now this cake has a better colour, and is of superior quality, than the decorticated cotton cake which now and then arrives at Liverpool. You will find also in the parcel a small bit of mouldy decorticated cotton cake, which is rank poison to cattle. The fungoid growth on cotton cake is especially pernicious. The cake was sent to me for examination, it having killed several beasts. You will find also a specimen of very bad cotton cake, full of cotton fibre, and another the husk, of which is coarsely ground. These are only specimens of numerous samples of cake similar in character to the specimens sent, and all of which did mischief to stock. In the course of my experience I must have had not less than fifty so-called poisoning cases, which were due to the coarse husk in whole seed cake, or the injudicious manner in which the cake was given to sheep and cattle. My experience is that it is not safe to give whole seed cotton cake to stock, unless the husk is ground tolerably fine. The cake otherwise produces constipation of the bowels and inflammation. Properly ground whole seed cotton cake may be given with safety to growing stock, to milk cows, and, mixed in equal proportions with linseed cake, to fattening stock, provided they get roots or some other succulent and rather relaxing food along with the cake." You will observe, gentlemen, that Dr. Voelcker does not lay any stress on the presence of cotton fibre in the cakes which have proved so injurious. My belief is (and that has led me to write this paper) that to the joint presence of husks and fibre are really to be ascribed the fatal results. You will recollect that in the various processes I have detailed, that the seeds were entirely denuded of all cotton; and the Chinese—a thoroughly observant and practical people—had, doubtless, at an early period discovered that it was prejudicial. Cotton is said to be a modification of lignin, and completely insoluble in water, alcohol, ether, oils, or vegetable acids. Strong alkali leys dissolve it, the strong mineral acids decompose it. Thus when steeped in a mixture of sulphuric and nitric acid, it is converted into that very remarkable substance, gun cotton, and this in its turn dissolved in ether forms a liquid plaster mostly used by surgeons, and called collodion. Its non-solubility, except in strong leys, would, I think, alone warrant its rejection. There are, however, other objections. The injury to the cake from damp is doubtless owing to the absorption of moisture into the tubular hairs. It is well known that during wet seasons the seeds putrefy, and the cotton would in this case absorb the putrescent matter, and probably give rise to those fungoid growths which are so poisonous. The presence of cotton fibre in the manure of animals which have died, and when masses of husk and fibre commingled have constantly been found, will, I think, satisfactorily and convincingly show that the cake, to be good and fitted for food, should be freed from these two substances, and as the imports of cotton cake from the continent, and that fabricated in our own country, prove that the consumption is largely on the increase, it would be to the interest of the manufacturer to provide the agriculturist with an article free at any rate from those matters which are believed to be so injurious. His confidence in it would be established, it would be more generally employed on the farms for feeding purposes, and the results in the long run prove more satisfactory to the vendor and purchaser. However, nothing is more easy than to hazard conjecture, invent theories, construct plausible hypotheses, and indulge in generalisations. In the region of doubt and obscurity there is always ample scope for

the exercise of that barren ingenuity by exciting surprise rather than producing conviction. My object has throughout been of a humbler, though, as I conceive, of a much more useful kind: how far I have succeeded in this object, or if I have succeeded at all, is a very doubtful question; but if this paper produces any good results in this respect, I am rewarded.

Dr. PALMER then exhibited various specimens to illustrate his subject, these including raw cotton, the cotton seed with fibre attached, seeds cleared of the fibre, pure decorticated cake which had been proved to be prejudicial to stock, gun cotton, and also a drawing of the cotton plant. The Doctor said he had written to persons in all parts of England, but had not succeeded in obtaining information on the subject to the extent he had anticipated.

Mr. EVERETT believed that the great drawback to a more extended use of cotton cake and to its receiving greater support from practical men was its imperfect mechanical condition. If that could be improved, there was no doubt that cotton cake would meet with a much larger sale, both as food for stock, and also as an artificial manure.

Mr. DARKE said Professor Voelcker pointed out that one great advantage of the consumption of cotton cake was the large amount of residuum in the manure.

Mr. S. WENTWORTH said he had used cotton cake to a large extent, and it had always answered his purpose. He had never found any ill-effects arising from its use. If used indiscriminately, cotton cake might doubtless cause harm; but if used moderately, it was a good and valuable commodity. He concluded that the demand for it had much increased, from the fact that at first it could be bought at £5 10s. per ton, but now £7 10s. per ton was charged. He had no doubt that the price for decorticated cotton cake would be as much as £9 10s. per ton.

Mr. EVANS thought that the great drawback to its more extensive use was its high price, as it could not be procured much under £8 per ton. With cotton cake at such a price as that, he considered linseed cake was the cheapest to use.

Mr. J. G. WENTWORTH hoped that his friends would make a point of asking for the decorticated cake, which at present they never had offered them in the market. If they did that a demand would be created, and they would no doubt be supplied with the best article. Dr. Palmer's experiment of breaking-up a piece of cotton cake and examining it appeared to show that there were nine parts of rubbish to one good for anything.

Mr. JAMES PALMER believed that such addresses, with the discussions evoked, must have a tendency to counteract that system of fraud which was too largely carried on in connection with the manufacture and sale of cotton cake, and other feeding stuffs of a similar description.

Dr. PALMER briefly acknowledged the vote of thanks passed, and mentioned that the Chinese used cotton cake as a manure, and spoke of it as being a most valuable one.

A WEST CUMBERLAND FARMERS' CLUB.—A large and influential meeting of the farmers of West Cumberland has just been held in Whitehaven, for the purpose of establishing a Farmers' Club in the western division of the county. Mr. Rawlinson was voted to the chair, and at some length advocated the importance of farmers' clubs in general, pointing out that Penrith, Wigton, and other places were possessed of similar institutions, and he did not see why West Cumberland should be without its club, and proposed that a farmers' club be formed. Mr. Stanley, Ponsonby Hall, seconded the motion, which was agreed to without a dissentient voice. After some further discussion, the following gentlemen were elected, on the motion of Captain Fisher, as a committee to form a code of rules: Messrs. Rawlinson, Patison, R. Jefferson, W. Fox, St. Bees; Capt. Fisher, and W. Towerson. It was proposed by Mr. Hartley, of Gillfoot, seconded by Mr. Turner, that Whitehaven be made the head-quarters of the club. Mr. Stanley (Ponsonby Hall) proposed as an amendment, seconded by Mr. Hutchinson (Braystones), that the meetings of the club should be held at Egremont. The Chairman having put the motion and amendment, the former was declared to be carried.

WHAT IS COMPULSION?

Any proposal for establishing a system of compulsory education in the rural districts has led to no little coquetting with the question. It is, indeed, manifestly difficult to determine where compulsion may begin or where it shall end. If we set out by saying that the head of a family shall send his children to school, then we are declared to be interfering with the rights of a free subject. On the other hand, it is coming to be pretty generally admitted that a man shall not send his children to work, and it is not so easy to see what is compulsion and what is not. So far as the present maintenance and comforts of a household be concerned, the chief interference is clearly with the man's market for that he has to sell. We are willing to make a law the direct effect of which will be to deprive the farm labourer of possibly a very material part of his income, although we decline to go further and complete the scheme to which thus much is only the introduction. But, as it is urged, the means for educating the people which we already possess are amply sufficient, if such be only properly looked to and developed. Surely, however, the whole subject requires revision, when we have thus early agreed to so grand an alteration as that now contemplated. Henceforth labourers' children under nine, ten, or eleven years of age will not go to work; but is the alternative so certain, that they will go to school? In many, in a great majority of cases, let us allow that they will; but laws, after all, are made mostly to meet exceptions, and it is plain enough that so far there are numbers of working-men who are more than indifferent to their families receiving any education. As likely as not they themselves have never enjoyed the advantages of any such kind of instruction, and they consequently may be less able to appreciate the good of this to others. Still, when we stop work in the field it may be argued that we supply a great inducement for study in the school. The child may certainly seem to have nothing else to do. But when we sensibly diminish the means of a parent whose pennies must be counted as pounds to others, can we reckon on the weekly pennies continuing to flow in as they have done hitherto? The new Act will be a very sweeping one when it strikes, as it will do, at ten or eleven years of age as the minimum at which labour is ripe or ready. A man may have two or three children thrown, as it were, on his hands at something under this limit, as the *res angusta domi* may suggest all sorts of ways of turning their services to account. They may be sent "cadging about," as they often are now, in the woods and lanes, collecting firing or manure, or be made to mind house while the mother goes out washing or tramping. There is nothing finer for a philanthropist to advance than that no lad shall begin to earn his livelihood until he is ten or twelve years old; but the real pith of the question is, how can he live in the interim? So far as schools and teachers be concerned, a supply quite equal to the demand might no doubt with a little attention be ensured. We might go even further, and assume that a becoming education might be obtained at a cost little more than nominal; but nevertheless the difficulty is not got rid of. There are many labourers who do not "care about" their children going to school, and there are many others who cannot afford to send them. In some districts already there is a superabundance of schools, and unless we proceed very cautiously we may only further develope the movement in this direction.

It is the extent of compulsion to which we are willing to go, and which the recent revelations over the gang abuses have made a necessity, that tends so much to complicate the question. Under the circumstances from which we are about to emerge, nothing could promise better than the dame's or the night-school. But a lad at ten or eleven years of age will need something more than the dame can teach him; and if, as we provide, a boy has nothing else to do during the day, there can be no possible occasion for his going to school in the evening. It is a delicate business, no doubt; but it is a matter that we must do something more than coquet with. As for secular education, Government aid, periodical inspection, efficient tuition, and so forth, these are but after considerations or consequential features in a scheme of which the foundation rests elsewhere. We have come to declare that the farm-servant's son must be educated up to a certain age and point, and we have now to ascertain how far the serving-man is willing or able to carry out the principle. If left to himself, the result, as a rule, is by no means so certain; if compelled to give in his adhesion, the agency by which we work upon him is un-English and unpalatable; and so we almost inevitably take to coquetting with the difficulty, and getting off by a side-wind. No father shall be forced to send his son to school—that would be un-English; but no master shall give that same son employment until the boy can read and write—and this, as it seems to us, would be more un-English still. Your children shall not go to work before they are ten years of age; and, again, they shall not come to work unless they be properly educated; but clearly understood, nothing like compulsion is to be attempted! Surely this is hair-splitting, or beginning at the wrong end; for if any one should be taught to look before him, it is the poor man, who often enough cannot of himself look further than Saturday night. The difference, moreover, between direct and indirect interference is so slight as to be scarcely discernible. If it would be a wholesome enactment that a farmer should not engage a boy unless he could read and write, this might run yet more safely "unless he had been to school." There would thus be no fear of sending fathers of families to prison for any neglect of duty; but the initiative would be, as it in fact must be, with the higher class.

This topic has just been taken up at the Farmers' Club, as by the Chamber of Agriculture, and continually during the last few months by similar Societies all over the country. There is no question, either, but that much good will come of such discussions, and proportionately the more, the more directly the difficulties of the case are confronted. It is by avoiding these encounters, and leaving the Government at the last moment to deal with such issues as it pleases, that the agriculturist so frequently loses his opportunity or weakens his position. Lively as was the last debate, it is impossible to shut our eyes to the fact that the one material word of the subject was either passed over, or made to assume a variety of phases that led rather to bewilderment than elucidation. Put it as we will, after having gone so far as we have gone, the home question is this: Have the labourers generally the means or the desire for giving their children that better education, which is now declared to be essential? In the opinion of many, the man is doing very well as he is, either in comparison with other classes or other countries,

and no doubt his condition does often contrast favourably enough with that of many citizens, either at home or abroad. We have, however, resolved to go on, to establish some more general advancement; and in doing so we have let in the end of the wedge, loath though we

may be to drive it further. The greatest hardship to a needy man is any loss of his income; and when you force him to such a sacrifice, you have brought to bear the principle of compulsion in its most sensitive application.

CENTRAL FARMERS' CLUB.

COMPULSORY EDUCATION.

The monthly meeting of the Farmers' Club took place on Monday evening, April 6, at the Club-house, Salisbury Square, Mr. C. S. Read, M.P., in the chair. The subject for consideration was thus stated on the card: "Would compulsory education promote the interests of agriculture?" Mr. J. B. Spearing, of Benham Lodge, Reading was the introducer.

The CHAIRMAN, in introducing the proceedings, said: Gentlemen,—The subject that we are met to discuss is second to none in importance, and it is also, in my opinion, of immediate importance. There is no shirking this education question, because we may be quite sure that if we do not take it up, other people will do so for us; and therefore I think we had better set to work to express our opinions clearly and definitely on the subject. We are not, I contend, as a body, adverse to the education of the agricultural labourer (Hear, hear). I say that most emphatically and distinctly. I wish this to go forth as my opinion, and I believe that I represent the opinion of the majority of farmers on that subject (Hear, hear). But some of us do object to the quality of a certain description of education that is imparted, and I think our objections are right and sound. Some other people say that there is plenty of education. If we multiply schools, many say, it is no use having them unless children are forced to attend them. That brings us to the subject on the card, which is this: "Would compulsory education promote the interests of agriculture?" I am quite sure that no member of this club would treat that subject better than our friend Mr. Spearing (Hear, hear). I happen to remember that in the year 1863 that gentleman read to the club a paper on the effects of temperature upon cultivation; and if he handles this subject as successfully and as practically as he handled that, we shall have a most interesting introduction, and we shall feel very much obliged to him for having brought it forward.

MR. JOHN B. SPEARING (Benham Lodge, Reading) said: When I named to our secretary, in December last, I thought the Educational question would be an interesting one to discuss at this Club, I had no idea it would have become so popular, or that it would have been so fully ventilated ere this—so much so, that we may be inclined to suppose it has been well nigh exhausted, and little remains to be said on it; but education happens to be of a very flexible nature: the more we press it the more it expands. Instead of all taking a similar view, there seems to be a great diversity of opinion as to what education

is, and what it is not; what part the State ought to take in promoting or enforcing it, and how and by whom the expense should be borne; whether it should be of a purely secular nature, or deeply mixed with religious instruction, or again whether it should be of a more neutral character. We have had before our notice, amongst many others, Lord John Russell's views in the House of Lords; a National Conference on Education, in Manchester; a Royal Commission issued for Ireland; a Conference in Liverpool, where Mr. Lowe propounds his views; a meeting of the National Society at Tunbridge Wells, where the Archbishop of Canterbury and the Bishop of Oxford give their ideas; Mr. Bright, at the Birmingham meeting of artisans, expresses his opinion; a Conference on National Education at Willis's Rooms, in London, where certain resolutions are passed. Again, immediately Parliament opens, Mr. Foster is very eager to press his views before the public, and more recently still we have the Government measure proposed by the Duke of Marlborough. I will not trespass on your time by repeating what they have said, or what particular systems they have propounded, but beg of you to bear with me a few minutes while I take an agricultural view of the question, and make, first, a few practical remarks on the present system of education, its capability of improvement, so as to meet the requirements of the age; and secondly, to show some of the objections to compulsory education, and how it would affect the agricultural population of this country, and the interest of agriculture generally. In speaking of the present system of education, I will not stop to question whether education in any form is desirable for the agricultural labourer or not: I know there are some farmers, even in the present day, who are totally opposed to it, and assert that the less learning the agricultural labourer has, the less cunning he is and the better servant he makes. This indifference or objection may arise either from the want of a better and more extended system of education amongst those farmers themselves, or from the absence of any good result produced under the present system upon those who may have come under their immediate notice. Suffice it to say, it is generally allowed that a certain amount of education is desirable, even necessary, and that every English boy and girl should be taught how to read and write correctly, and thoroughly understand the first rules of arithmetic. Now, is not the present system of voluntary education, with the assistance derived from the State, sufficient for this purpose, more especially in country districts and agricultural parishes? The grants of the Privy Council (taken from the Statistics of Education, by W. L. Sargent, Esq.) began with £30,000 in 1839, rose to £100,000 in 1846, touched their highest point £313,442 in 1861, and (under the revised code) declined to £508,463 in 1866. The work done for this money is partly shown in the following table:—

Years ending 31st Aug.	Parlia- mentary grants.	Number of schools inspected.	Average in atten- dance.	Number present at inspec- tion.
1854	£ 263,000	3,825	461,445	473,214
1855	398,921	4,800	537,585	569,076
1856	451,213	5,179	571,239	645,905
1857	541,233	5,398	626,696	700,872
1858	663,000	6,641	761,027	821,744
1859	806,920	6,686	801,401	880,131
1860	798,167	7,272	884,234	962,932
1861	813,442	7,705	919,935	1,038,690
1862	774,742	7,569	948,629	1,040,310
1863	804,002	7,739	992,185	1,076,432
1864	693,038	7,891	982,485	1,110,357
1865	636,806	8,438	1,021,199	1,214,270
1866	508,463	8,753	1,039,183	1,264,820

About 1,250,000 children are under the direct influence of the Privy Council and their inspectors, at a cost of about 12s. a-head including the annual charge for building. We spend three-quarters of a million a-year on education. In France the State expenditure is about £1,000,000. In the United States (in eighteen Northern and Western States) a dollar a-head of population is expended on 18½ millions of free people. If the results at present attained are not all that could be desired, let us look into the system, and see if there are not more defects and errors in the application of the machinery than in the machinery itself. There are in England and Wales thirteen training colleges for schoolmasters, viz., Battersea, Cheltenham, Caermarthen, Carnarvon, St. Mark's College (Chelsea), Chester, Cullham, Durham, Exeter, Peterborough, Salford, Winchester, and York and Ripon. There are also thirteen training colleges for school-mistresses, viz., Brighton, Bristol, Cheltenham, Derby, Durham, Hookerbill, Lincoln, Norwich, Ripon, Salisbury, Truro, Warrington, Whitelands (Chelsea). At these colleges school-masters and school-mistresses are trained and prepared for their future duties; the instruction they receive there is really good, all that could be desired if the pupils remained long enough; but this they seldom do. After they are able to pass just the minimum amount of examination required, they go out to take charge of schools, still continuing their studies so as to pass higher examinations from time to time, which enables them to obtain removals to better schools with increased salary. What is the result of this? The children learn by rote and get a certain amount of book learning, and rules are forced into their minds without any explanation whatever of their principles; while the teacher's minds are engaged in their own studies, instead of giving their sole attention to their pupils, trying to gain and influence over them, and make learning as easy and agreeable as possible. We need not be surprised then that the result of such instruction should be unsatisfactory, and I believe it is in a great measure to be attributed to the cause I have here named; there is no hope of its being different until the pupil-teachers pass every examination that can be required of them before entering on their duties in a school, after which time their advancement should entirely depend on the results that are produced on the examination of their pupils. If this alteration were made in our present system, I feel sure we should have more satisfactory results, and on this the proportion to be allowed to each school out of the Government grant should depend: we could then look for a great increase in voluntary subscriptions. As to the amount of religious instruction that should be included in

any system of education, or whether secular teaching is all that is requisite, I leave others to decide; but for my own part I cannot conceive how any one who has really seriously considered the matter, or who has the welfare of the lower classes at heart, could be satisfied with any system of education that was not based on strict religious principles and deeply mixed with it: any other plan of teaching would be only the same without the reality, the shadow without the substance. Secular teaching has not proved satisfactory either in France or America where it has been tried; nor is it likely to do so here. By all means let every denomination have their schools, and let them be entitled, according to the results they produce, to a fair share of the Government grant; but never let us sacrifice religious instruction, particularly at a time and in an age when there is every tendency towards infidelity. Of all the evils and losses we are subject to, from having an ignorant, simple-minded, uneducated class of labourers to deal with, they are few and trifling compared with what we have to dread from those who, possessing a certain amount of secular knowledge unminged with any religious principles, fear neither God nor man, but sin with a high hand, and commit crimes which we shudder to contemplate. Next, as to the age when education should cease, or rather when children, particularly boys, should be taken from school, in order that their earnings should contribute towards the maintenance of the family. Now, I think at 11 or 12 such may be done without damaging his prospects in after-life; and should he be one of a very large family, a little younger would be of no very serious consequence. From my own observation I have generally found that a boy's principles are for the most part formed at 11 or 12 years of age; and if he is not truthful, honest, and well disposed at that age, he is not so at 14 or 15; if he remains at school he only becomes more unprincipled and more unmanageable, besides the bad effect his influence has over those with whom he associates; such a boy loses nothing by being put early to work, and the world to him may prove the best school; and should he early commit crime and fall into sinful habits, there is more hope of reclaiming him than there would have been had he remained longer at school, become more hardened, and attained a greater age before he faced the realities of life. On the other hand, most boys who are well disposed have an opportunity of keeping their minds from rusting, and adding a little to their stock of learning, either in night-schools or elsewhere. Having made these remarks on the present system of education, and its capability of meeting all the requirements of the age, I certainly think the time has not yet arrived when we should be justified in abandoning it, and adopting another system that has not been tried in this country, and cannot be recommended for the results it has produced in any other part of the world. If we did so, we should be like the farmer who purchases a very perfect and complete set of machinery to do almost everything he requires on his farm, but finds, in applying it, that it does not quite meet his expectations and do of its own accord everything he expected. He therefore abandons it, and, at a considerably increased cost, purchases another set which is calculated to do more, but, to his regret, discovers that that which was wanting in the first is doubly so in the second, and that it was not the machinery at fault, but his want of perseverance and mechanical knowledge in applying and working it. A considerable number of persons have of late been seized with a sort of infatuation, and seem to have jumped to the conclusion that nothing but compulsory edu-

cation—to be paid for by compulsory rates levied for that purpose—will meet the wants of the times; and we have reason to believe there are many of our members of Parliament who are prepared to support a bill in the House of Commons to that effect. I believe I am correct in saying that the agricultural interest are nearly unanimous in their opinion that such a measure is wholly uncalled for; that there is nothing in the present state of the country to warrant such an un-English proceeding; and that they will use every effort in their power to oppose its introduction, or being carried into law. I cannot help thinking that the persons who conceived such a plan must have done so while strolling through the streets of some of our crowded towns or cities, where numbers of little objects of misery and crime came under their notice, and the idea struck them how easy it would be to compel such to attend schools, and how very much more beneficial the instruction received there would be to them in after-life than thus wasting their time in idleness, dissipation, and vice. Be that as it may, it is not my business this evening to speak of education in towns, but more particularly in the country. I cannot fancy that such persons could at the same time have been very well acquainted with country life, or known much of the habits, dispositions, and tempers of those who live in rural and secluded situations, or the difficulties that lay in the way of compelling them to do that for which they have no inclination. How do they propose to get over these difficulties, and persuade parents who are not very much impressed with the advantages of education (and would think worse of it if it was forced upon them) to send their children to school, when living, as many do, a mile or two from the school-house, with roads for nearly half the year almost impassable? Do they propose employing extra police to enforce attendance, and thereby considerably increase our county expenditure, which already bears too heavily on the agricultural interest, from the rates being based on the present Poor-law assessment, to which a great amount of wealth in this country contributes nothing at all? Or, in the case of refractory parents and children, do they propose after the first or second offence to inflict some punishment, and, if so, what is the nature of it to be? Are our prisons or reformatories to be the receptacles of these culprits? If so, we have a fair prospect of more expenses still. I cannot think that the promoters of this new scheme anticipate going to this extremity. If they do, they will find that their new and expensive machinery will not do the work they calculated upon, and will have to reconcile themselves to the fact that the ignorant, self-willed, obstinate lout, who does not know the value of education, and will not avail himself of it, must still remain the ignorant, self-willed lout. There will also be a considerable number not so refractory and self-willed, who will obey the law (not so much from conviction as from the fear of offending), from whom we have no right to expect any satisfactory results from forced instruction. These will be something like the servant who was compelled by his master to go to church against his will, congratulating himself that, though he was obliged to go, yet there was one thing he was not obliged to do, and that was to pray when he got there, and therefore he would take care to avail himself of the little freedom he possessed. In speaking thus strongly against the system of compulsory education, I would not have you suppose that I impute to any who have proposed or advocated it anything but good and proper motives; but I must say, in all I have heard or read on the subject, there is not one argument to convince me that any great change is required, or that such a plan can be practically

carried out with any moderate prospect of satisfactory results, to say nothing of the extra cost, which, I gather from a paper recently read at the Herefordshire Chamber of Agriculture, is computed to amount to about three millions of pounds per annum for two million of children, or a rate of 8d. in the pound on £93,638,403, the present annual value of rateable property in England and Wales. Having undertaken to call your attention as agriculturists to this subject, I feel I am bound to point out what I consider to be some of the defects of the system which many have advocated and would like to see introduced; also the necessity of weighing the matter thoroughly, before we abandon one which cannot be said to have been fairly tried as yet, and certainly does not show any signs of failure in its results. It is not my present object to make ourselves so well satisfied with the present voluntary system as to fancy nothing more remains to be done, or that we may relax our exertions. What is wanted is more countenance from agriculturists generally, and increased subscriptions; with a more liberal grant from the Privy Council, and help to those schools in small parishes which cannot afford to employ certificated masters and mistresses. These wants are proposed to be supplied in a great measure by the Government Educational Bill now introduced where education is encouraged but not made compulsory. Should this Bill, however, pass in its present form, the practical result will be that our present church day-schools will become places of secular teaching only, and must be entirely separated from the parish church and the church Sunday-school. This will, I fear, very much imperil the voluntary efforts that are now enlisted in support of elementary education, and tend to reduce the subscriptions. If this cautious and conciliatory way of dealing with this delicate part of the question meets with the general approval of the agricultural body I shall be surprised, and the more so if it works as well as some predict, though I hail with satisfaction the announcement that it is intended to appoint a Minister of Public Instruction, also the proposition of placing all evening schools on the same footing as other schools. I have studied to make this paper as short as possible, and have for that reason introduced but few statistics or quotations, because I know there are many in this room who are more qualified than I am to express their opinions on the subject; I hope therefore to hear a better discussion than could be expected had I trespassed longer on your time. I trust what is said here may not be said in vain; and I feel sure that, however much we may differ on some points, we shall be pretty unanimous in our opinion that compulsory education would not promote the interest of agriculture.

The Rev. J. L. BREXTON (Little Massingham, Roughton, Norfolk,) said he had not previously taken any part in the discussions of that Club; but happening that day to be in London, he could not resist the opportunity of hearing what the members present had to say on the subject which had just been so ably introduced—a subject which, as the Chairman had reminded them, was second to none in importance, and the importance of which was just now especially urgent. From the reception given to the able lecture which had been delivered, he concluded that the general feeling there was in favour of what was termed the voluntary system, and hostile to that which was proposed as a compulsory, and which was also properly called a secular system; for he thought they were all agreed that if a compulsory system was introduced, one which would depend entirely or mainly upon general taxation, that system must be secular (Hear, hear). The dis-

putes about the conscience clause were as yet comparatively unimportant. At present all that was desired was that the parents' feelings should be respected; but if a system of education were introduced which was entirely dependent on rates and taxes, a conscience clause would be demanded, which would respect the feelings of the ratepayers. It was not to be supposed that money could be taken by compulsion from the pockets of Roman Catholics, of dissenters, or of those who called themselves secularists, without a demand being made that the money should not be used to teach anything which any of the parties might consider wrong. They must have either the voluntary system in alliance with the different religious denominations of the day, or a secular system which must thrust religion altogether out of the school; and he gathered from the remarks of the lecturer, and from the manner in which they had been received by many gentlemen in that room, that they felt very strongly on that point—that they thought it would be very dangerous to separate the education of the labouring classes of England from that connection with religion which was at present maintained (cheers). The objections to a secular as compared with a voluntary system were not, however, entirely religious; it would, he thought, be found that the financial difficulties were very considerable. Under a secular system, there would be wanting two very wholesome checks—the check of the parent, and the check of those who for one reason or other were able, whether as employers or as religious instructors, to manifest an interest in the school (Hear, hear). The immediate interest of such persons in the control of the school would be removed, and in its stead there would be Government supervision; for it was certain that when the Government inspector came in, and the school became entirely dependent upon him, the representatives of the voluntary interests would practically withdraw. He thought therefore that on those two grounds there was great reason to pause before making a change which, as the lecturer remarked, was liable to the great objection of its being un-English and quite new. He was also of opinion that the advocates of the secular and compulsory system had not proved their case, and had not shown that there was such a necessity for further interference as made the proposed change indispensable (Hear, hear). His own feelings were not, however, entirely in accordance with the present so-called voluntary system. He thought that the defects of that system had arisen from too great haste, and that a great deal of the good which had been attributed to it was, in fact, due to other causes. The progress of education during the last generation was very wonderful. That the voluntary system would not bear comparison with the French, the Prussian, or the American system, he was quite aware; but it had the merit of being English (Hear, hear), and had sprung naturally out of the existing state of things; and the defects in it appeared to him to have arisen from their having been in too great a hurry to educate the labouring classes. The result of too much hurry was, that the system which was originally planned by Sir J. Kay Shuttleworth, and which was a very wise one, for the purpose of producing a better class of teachers, was carried too far; and in the reaction of feeling which ensued, Mr. Lowe very much curtailed the system by introducing and carrying through Parliament a scheme for paying by results. Practically, the system of payment by results had imposed a great check on the extravagance which arose from the previous system; but in itself it was really not sound in principle. It was not sound in principle to pay so many pence down in the name of the country for persons who were earning good

wages (Hear, hear). He was satisfied that it was a dangerous thing to teach the largest class in this country—the agricultural labourers (for the census showed that they were far the largest)—that they had a *right* to receive from other people's payments such advantages as they were now receiving. He was prepared to say that reading, writing, and arithmetic were advantages. They were not necessities; but even if they were necessities, on what principle were they to be given without payment? Bread was not given except on condition that, if able-bodied, those who received it should work; and he was persuaded that if they departed from that principle, as regarded education, they would very rapidly drift into a principle which was entirely different, and quite un-English, teaching the people that, instead of depending on themselves, they should depend on the State (Hear, hear). Such a system might work very well in other countries which had a very different organisation from our own. It might work, for example, very well in France; but it must be remembered that there was a very great difference between France and England. In France, the greater part of the people were owners or occupiers of the land; and in England, the greater part of the people were only owners of labour; and it was a very serious thing to teach those who had only their labour that, without any effort on their own part, they were to have advantages and indulgences. If state aid was to be given, it was desirable that it should be given in a more indirect manner. He would like to see schools in a less dependent position. There were a number of persons in this country who were now getting their children educated by means of taxation, who could perfectly well afford to pay for education. That was a mischief which it was very difficult to deal with. There were other cases in which the position of matters was such that it was difficult to get any of the benefits of Government aid. There were a great many scattered districts, where, owing to the paucity of the population, the organisation of a school had not yet been secured. The right and sound feeling which made so many gentlemen interested in their agricultural districts, now pressed for an extension of the national system, in order that the more thinly populated districts might be reached; but if those districts could be reached without our being driven into an extension of the present Government system, or changing it into what would be still worse—a secular system, surely that would be very satisfactory. It was his own conviction that it was a mistake to treat the education of the labourer as quite distinct from that of the rest of the nation (Hear, hear). There was a great church society which called itself a Society for the Education of the Poor. It was, as it appeared to him, a mistake to treat any one class, and especially the largest class in this country, as the poor. The poor belonged to all classes; the poor were those who could not afford, owing to one cause or another, to live in accordance with the station in which they were born. But the labourers of this country, with the present rate of wages, were far from being the poor (Hear, hear). He spoke from experience of agricultural life. He had lived for 15 years in a county in which a distinguished gentleman of his own profession had raised a great outcry against the farmers of England, because the labourers were badly paid. Now he acknowledged, as every sensible and thoughtful man must do, that it was very desirable that they should see the labourers of England in much better boxes, with a much better education, and with many other advantages which they did not now possess; but he would ask whether in any other country in the world the labouring classes of society had made such progress of late years as the labouring classes of England had done (Hear, hear). The problem raised by Canon Girdlestone and some other gentle-

men was not to be solved by any hasty actions. It was a problem as old as the world how society was to have a high state of civilization without a great pressure upon the lower classes. Hitherto that problem had been solved by slavery or something equivalent to it. It seemed to him that these proposals for compulsory education had an element of slavery in them, and would fetter the freedom of labour. The policy of England should be to make labour as free as possible. The alteration in the law of settlement which had recently taken place had for its object to make the labourer freer, and surely the true English system was that which would tend to secure a free labouring population—a contented population, gradually rising in the scale of human life. In this matter of education it must be remembered that the main object should be to secure good teachers. The cost of the production of teachers and the time which they gave to teaching formed an important element in the question. The Government aid was now called in at considerable expense, to raise out of the labouring classes those who were to teach them in future, and it was a question whether the sons and other relatives of farmers might not with advantage be made more available for that purpose. He was persuaded that if Government grants were made more to encourage the profession of teachers, extending from the lowest to the highest class, the question of education would be solved easily and rapidly (Hear, hear). There were now, according to the census, about 60,000 teachers in England, a number quite enough for the whole population. Unhappily, a very large proportion of them were unfit for the work of teaching, but it would be easy to render them or others fit for it. If the Government were to associate with the grant an ultimate pension to induce a number of the middle-classes to enter into the profession of teaching, the farmers of England would, he believed, find among their own sons or among middle-class persons in their own parishes an amount of help which had never yet been discovered for the work of education. The clergy had hitherto made great efforts, but unhappily they had not, generally speaking, met with adequate support, and if their labours were supplemented by those of farmers and their families, there would then be an extraordinary power for completing the education of the labouring-classes. He entirely agreed with the lecturer that the voluntary system was far preferable to the proposed secular system; but he thought there was a *via media*. He thought that if the grants of the Government were given to the teachers and not to the schools, they might separate secular from religious teaching; that is, they might pay for reading, writing, and arithmetic, and nothing else, and the conscience question would not be raised at all. Only let them not require the Government to enter into a partnership in the school; for if it did that, it must mix itself up with the different religious questions.

Mr. C. WISCOMB (Exeter) congratulated the meeting on the part taken in the discussion by a gentleman so well acquainted with the subject as Mr. Brereton was, and who had done so much for the cause of education. There was no more successful school in the kingdom than that which the rev. gentleman inaugurated at West Buckland, in the county of Devon; and in the middle-class University examinations the pupils of that school had greatly distinguished themselves. He must say he was rather astonished to hear Mr. Brereton say that he thought it desirable not that the Government grants should be stopped, but that they should be given to raise a good class of teachers. Having had some experience in this matter, he could testify that there were very many cases in which it was absolutely necessary that some State help should be afforded to schools in distant parishes. He would go further, and say

that in many parishes and districts it was not necessary to have highly educated teachers. He believed that what the Government now proposed, namely, the providing in every district the means of simple education by aiding local efforts, would prove the best system. If a railway were formed in a new district, the owners of it did not tell the people there that they should travel, but the result was that they did travel; and in like manner if schools existed in a district they need not tell the people that the children should go to school, but the parents would in fact send them. He daresay many gentlemen present had heard of the plan adopted by Miss Burdett Coutts in the county of Devon. She suggested a plan under which good schools were formed; but instead of there being a master for every parish, there was one master for a district. The master was always at work in one place or another aiding the mistresses one after another, and the result was very satisfactory. They should, he thought, do what they could to extend voluntary education, giving help where there was good honest teaching in accordance with the wants of the district and the position in life of the children; and when that had been done the State would, he believed, have done all that it could do usefully for the education of the people. He did not entirely concur in what Mr. Spearing said about not keeping a boy at school after the age of 11 or 12. In his opinion it was desirable to keep boys at school later wherever it was practicable, for as a rule a lad would learn more between 11 and 13 than between 5 and 11. There must be payment by results; that was the only test which the Government could apply; but then, the Government should not look for the same results everywhere (Hear, hear.) That was a difficult and delicate question to be solved, but he hoped it would be solved by the Government leaving it in a measure to the districts to determine what results were desirable. Let the standard be as high a one as could be obtained; but they must not expect to see the same standard maintained everywhere remembering that the grand object was the education fairly, and honestly of the children of the poor of this country (Hear, hear).

Mr. JAMES HOWARD (Bedford) said in the matter of education he was not in favour of any Permissive Bill or half measures. But, whilst speaking in the presence of the Rev. Canon Brereton and other gentlemen who had paid greater attention to that subject than he had perhaps himself, he said with the greatest deference that he could not agree with Mr. Brereton that the Government went too fast in assisting voluntary effort. He rather thought that the great mistake which had been made was that successive Governments had not followed the example set by other countries, and adopted a broad and comprehensive scheme of education; that they had stood still, and left that great social problem to be solved by the clergy and benevolent individuals. He agreed with the chairman that there was no shirking that great question. The nation had made up its mind that the children of the country should be educated—that is, that they should be educated in the three elementary branches of reading, writing, and arithmetic; and if the agriculturists stood still, they might depend upon it that other portions of the community would go forward, and take the question out of their hands. He was himself opposed to compulsory education. He held that it was the duty of the State to see that in every parish, in every district, sufficient school accommodation was provided for the children of that parish or district; he held that a good education should be the birthright of every British child. He had said that he was opposed to compulsory education; not that he thought it would not be an excellent thing if every child in this country had sufficient elemen-

tary education to fit him for that position in life which he was likely to fill. But compulsory education had broken down in free countries. It had been tried in several States of America, and had been found altogether an impossibility. He might be told that in Prussia a compulsory system had worked well. His answer to that was this, that what was quite possible under an imperial government was utterly incompatible with a constitutional and free government like that under which they had the happiness to live. The Chairman had said repeatedly that there was no shirking this question. If he meant by shirking the question that agriculture could expect to shirk any portion of the expense of education, he agreed with him. He did not think the farmers of England could expect to shirk altogether the question of expense. Not, indeed, that he thought the whole expense should fall upon the occupiers of land (Hear, hear.) He agreed with the hon. Baronet opposite (Sir G. Jenkinson) that the local taxation of the country was already sufficiently great, and perhaps much too great; but although the local taxation might not be properly adjusted, that was no reason why the farmers should be altogether exempted from contributing to the educational necessities of society. Whilst he would join most heartily in getting the local taxation properly adjusted, he had come to the conclusion that some share of the expense of education must fall upon the farmers of England (Hear, hear.) He admitted that the religious question was one of very great difficulty, but he did not think it was an insuperable difficulty, in the way of adopting a broad and comprehensive scheme in this country—that is if each party in the country would give way a little; and they all knew that all great measures in this country were carried through some amount of compromise. Mr. Spearing alluded to the question of secular education, and seemed to have arrived at the conclusion that secular education had altogether failed in America. Now, he (Mr. Howard) might tell Mr. Spearing that secular education had never been tried in America. He held that in schools where the bible was read, and prayer offered at the commencement and close of school, the education could not be said to be secular. He held that religion could be better learned from God's own book than from any catechism or book that was ever written by man. Therefore the question of secular education so far as America was concerned fell to the ground, because such education had never been tried. Mr. Spearing also spoke of denominational schools. Now he believed that they were very much indebted to denominational schools, for nearly all the voluntary schools that had been started were denominational. But he objected to the principle of denominational schools. He believed that Christianity broadens and intensifies man's sympathies, while on the other hand the denominationalism, as it exists in England, tends to narrow them. If they brought up all the Church boys in one school, and all the dissenting boys and all the Roman Catholic boys in separate schools, the result would be that they would grow up with narrow and contracted views, they would form prejudices which should not exist, but which would be thrown to the winds if they were to mix with boys of other denominations. Therefore he objected altogether to the principle of a denominational school, although that objection applied to most of the schools that then existed. Having thought much on this subject, he had come to the conclusion that, seeing that it was desirable that the broadest sympathy should exist between all classes of society, denomination schools were an evil, being calculated to lay the foundation of prejudices which perhaps might never be eradicated in after-life. As to voluntary education, it had been tried, and although it had done something towards meeting the wants of the country, what was the actual result? To quote the words

of an influential journal, "Of all civilized and Protestant countries, England stands at the bottom of the list, so far as educational accommodation is concerned." He had stated that he was opposed to the passing of a permissive bill. If a measure were good, it ought to be applied universally. If they were to rely upon the patriotism of people in all parts of the country, they would have to wait a long time before they saw the education of the whole people of this country what it ought to be. Some time ago he was asked by one of Her Majesty's Commissioners on Education, with whom he had several interviews, to put his views on education—for the rural districts—in writing. Having done so, with the permission of the meeting, he would conclude by reading them. It was as follows: "I contend for a comprehensive scheme of national education; the schools to be subsidized partly from the national treasury and partly from local taxation; the local tax to be paid jointly by the owner and occupier. That all schools be placed under the present Committee of Council on Education, which I think should be styled the Board of Education. That the country be divided into educational districts, which districts could be subdivided as occasion might require. That an Educational Board be appointed for each district, charged with the management of the schools, including the appointment of masters and mistresses, and other duties to be defined. That any acts of the Local Board should be subject to a reference to the Central Board. That the Local Boards should be required and empowered to provide proper and adequate school-accommodation in parishes or places *where such does not exist*. That in the event of the Local Boards failing to provide the necessary schools and accommodation, the Central Board shall cause such to be provided. That the Local Boards be elected by the several parishes in the same manner as is adopted in the election of Poor Law Guardians; that all justices of the peace residing in the educational district shall be ex-officio members of the Local Board. That the Local Boards shall appoint for each school or parish "School Visitors," whose duty it shall be to report to the Local Board any improvements or alterations which they may deem desirable. The Visitors may be selected from members of the Local Board or from the clergy, ministers, or other residents in the parish, or from any adjoining parish. Ladies should be also appointed or invited to act as Visitors for girls' schools. In a parish or place where sufficient school accommodation already exists, such parish or place should be exempted from the general school rate of the district; and if such schools are supported without Government aid, although they may have received a grant toward the building, then they shall be exempt from the authority or Government of the Local Board. That Local Boards should be empowered to negotiate for and (subject to the approval of the National Board) conclude the purchase of any existing school within their district, whether belonging to private individuals or otherwise possessed. That in the appointment of teachers to the existing denominational schools, the teachers shall belong to the same church or denomination as the schools to which they are appointed. That the Local Board shall, subject to an appeal to the National Board, determine the curriculum of the schools, except so far as relates to religious instruction. That the reading and reciting of Holy Scripture be the sole religious instruction, except as hereinafter provided. That a portion or portions of Holy Scripture be read, and prayers offered at the commencement of the school and at its close. That, in order that no distinction should be drawn by the State between the various religious bodies, all parents shall be required, when making application for their children to enter any school, to fill up a form of appli-

education, in which it shall set forth whether they desire that their children be instructed in the religious teaching of the school, where it may be practised, beyond the reading of the Scriptures; and to meet the case of the Secularists, the same form shall contain a column in which the parents can signify their wish that their children shall not receive any religious instruction, nor attend prayers, or be required to be present during the reading of the Scriptures. The above provision, I conceive, would meet the difficulties of Churchmen, Wesleyans, Baptists, Roman Catholics, Jews, and Secularists. All would have the same liberty, and this whatsoever school their children might be about to enter. I am opposed to compulsory education, because I believe in a free country like England it could not be enforced. I believe if children were not permitted to engage in agricultural labour until ten years of age, the object would be secured, and there would be no need of any compulsory measure."

Mr. EDMUNDS (Rugby) said he felt some difficulty in addressing himself to the question, because the discussion had got beyond his depth. He thought they had come there that evening not to say what in their opinion should be done, but what should not be done. There was, he believed, a strong feeling in the country generally against compulsory education (Hear, hear)—against what he might call taking away from the parent the duties which devolved upon him, and placing them in the hands of the State. Everyone must feel that if the State was to act, it must act for the whole country. It could not act in this way for a town and in that way for a village; it could not act in one place with reference to the fact that there nearly the whole population belonged to the Church of England, while in another they were nearly all secular. As soon as education was made compulsory new difficulties arose. He had always contended that if men did their duty with regard to education they would beat the State out-and-out, none being so well acquainted with what was required for the people as those who resided among them (Hear, hear). He maintained that it was wrong for the State everywhere to take education out of the hands of the clergy, the farmers, and other residents, because there were certain parishes in which such persons did not do their duty; but as soon as education was made compulsory all cases and all classes must be treated alike. This question wanted looking at from two or three different points of view; but the Government could not do that, if education were compulsory; they must look at it only from one point of view. One speaker remarked that if the State interfered, it must interfere for all. True; but the question wanted looking at as gentlemen who lived in the country would like to look at it—from a Church of England point of view. In country parishes they required schools of a different kind from those in the towns, and he maintained that in such places schools were likely to be better managed under the clergy and other influential inhabitants than they could be through any State action. In this matter there was great danger of their being hurried on by too much steam. They had all imbibed more or less steam (laughter); nearly all had wanted to go too fast. There could not be a greater mistake than to run up a house before they had got the foundation properly laid. Why had this education question sprung up just now? Because some people said that reform had been precipitated, and therefore the people must be more educated. It was impossible to educate those on whom the franchise had been bestowed; they were beyond the age for education; so far as they were concerned, the mischief was done, and all that could be done was to elevate the coming generation of voters. Men got impatient of the evils around them. They saw how difficult

it was for individuals to make an impression on the mass; and therefore they called upon the State to make people religious by Act of Parliament, and to educate people by Act of Parliament: everything was to be done by Act of Parliament, and centralization was to reign supreme. Now, to all that he was strongly opposed. He much preferred all persons trying in their several spheres to do their duty. He believed that a feeling in favour of that was rising among them; and if men would have patience, that would, he thought, prove a better and truer means of education than any which the State could devise (Hear, hear). He did not see how anything better was to be done for the education of the people, either in villages or in towns. During the last thirty years education had taken an enormous stride under the influence of individual efforts. Why did men want to neutralize such efforts? They might depend upon it that, if they succeeded, that would do more mischief than almost anything that ever occurred in this country. A great deal had been said about the proselytizing of children. That was not such an easy matter as some persons seemed to imagine. He had learnt, on the best authority, that those who had attempted to proselytize boys had found it the most difficult task that could possibly be attempted. A boy would, generally speaking, especially if he belonged to the middle-classes, remain of the same religion and the same politics as his father (laughter). If anyone tried to make him a Tory or a Radical, he was not likely to succeed. It was when the boy grew into the young man of one or two-and-twenty, and began to think for himself, that he was apt to be influenced by the opinions of others; and then the school had, of course, nothing to do with the matter. He did not concur in what the lecturer said about boys being educated, and thereupon becoming mischievous. That reminded him of the old saw, "A little learning is a dangerous thing." He questioned whether ignorance was not still more dangerous (Hear, hear). He would rather boys had only "a little learning" than that they should remain in ignorance. As regarded the religious question, he did not think there was so much evil involved as many people imagined. Every child had a right, as Mr. Howard remarked, to education; and, whatever might be the case in the country, it would be impossible in towns to require that all the children who attended school should belong to the Church of England. The people would not tolerate such an attempt, and it ought not to be made. But there was, as Mr. Howard justly intimated, such a thing as the religion of the bible. He (Mr. Edmunds) would not have schools in which religion was not taught; but he would have schools in which all should hear the religion of the bible—that is to say, the bible should be read, so as to prevent in future such exhibitions as had been made by boys, or rather young men of eighteen or twenty, who had scarcely ever heard of a God or a Saviour. Every boy should at least be taught reading, writing, and arithmetic; and he would then be able, at all events, to read the bible for himself. In a paper on education which he read two or three years ago, he argued very strongly in favour of boys belonging to the middle classes being sent to school up to the age of sixteen. He did not, however, agree with the gentleman who had spoken, about the children of labourers being kept at school up to the age of thirteen. He should like to know how, in that case, boys were to get their bread (Hear, hear). Such theories were very nice; but the difficulty was to carry them out. If it were determined that children should not work, should not do this or that, the result might be that they would have nothing to eat. The difficulties of this question were very great; and it became all of them to interest themselves, and to try and interest others, in the work of their removal. The movement in favour of education was certain to

go on: it could not be stopped; and it would continue to progress, without the aid of the compulsory principle (cheers).

Sir G. JENKINSON said he agreed with a preceding speaker that, on this question, men were inclined to go too fast. This was an age of gigantic measures. It was not long since there was taken a tremendous leap in the dark on a particular question; and now Parliament was called upon, by another leap in the dark, to disestablish a portion of the Church of England which had existed for more than three hundred years (cries of "Order!"). He had no intention to trespass on political matters; but he only wished to illustrate his meaning as to the sudden and gigantic method of dealing with important questions in the present day. What he meant to say was that, on this question of education, as on others, men were inclined to go a little too fast. What was meant, he would ask, by compulsory education? There must be some meaning in the words. What was to be done with parents who refused to send their children to school, under a compulsory system? (Hear, hear.) Things must be looked fairly in the face. He was an advocate for education; but he was also in favour of looking at the subject reasonably, and he could not overlook the fact that, if there was to be compulsory education, there must also be penal measures to enforce attendance. It appeared that the amount of the pence paid by the children throughout England in 1865 was considerably larger than the sum contributed, either by voluntary subscriptions or by Government aid; and when there were excellent existing schools paid for at least to the extent of one-third by the children's pence, it would scarcely be necessary, he thought, to take another leap in the dark, and all of a sudden to adopt a compulsory measure which must involve penal action. He agreed with the last speaker that it would be better to encourage all to do their duty in the districts in which they resided. If the country generally would adopt some such rule as was sanctioned the other day by the Chamber of Agriculture of Gloucestershire—if the farmers all over England would make it a rule among themselves only to employ boys or young men who had been taught to read and write, or who had been in the habit of attending school up to a certain age—more would thus be done, he believed, to encourage good education than would be done by means of a compulsory rate. Englishmen did not like being driven, and he was satisfied that if compulsory education were attempted in this country the result would be that it would do more harm than good. Something had been said about those who now received school education not being all poor. He did not know whether that might not involve a larger conclusion than the speaker intended. He (Sir G. Jenkinson) thought that in the small rural districts the agricultural labouring class would not be able to obtain without assistance that education which the children of the present day required. He thought that where children paid their pence, it was only right, especially in small and detached rural districts, that the Government should give a grant-in-aid to the schools; for he knew from experience how difficult it was to meet the expenses of education in small parishes where there were but one or two landowners. He agreed with a preceding speaker that there should not be one unswerving standard of results as a condition of Government aid. The standard of education was naturally much higher in towns than in villages. He should like to see dame schools in some districts where the funds were not sufficient to support a certificated master or mistress. He was certain from experience that dame schools, and especially night schools, did great good (Hear, hear). If girls who were to marry labourers were taught to wash out a room and to cook victuals

in a proper manner, that would do far more good than many of the results which it was sought to establish as a standard (Hear, hear). One great inducement which many labouring men had, to frequent the beerhouse, was that their homes were not comfortable. Every one who was acquainted with Fines knew that if you only gave a woman some raw vegetables and a little salt and pepper to season them, she would make a palatable dish (laughter). In contrast with this, many a labourer had nothing scarcely to eat but a lump of raw bacon and a piece of bread. He was entirely opposed to any increase of local taxation for educational purposes, such taxation being already more than the Agricultural interest could well bear.

Mr. H. TRETHEWY (Silsoe, Amphil), said the general tenour of the discussion that evening turned upon the education of boys, and, except from a few remarks of the last speaker, it could scarcely be inferred that girls entered at all into the consideration of the subject. Now, his own opinion was that they were beginning at the wrong end, and that they ought to think first of girls as the mothers of future families (Hear, hear). It was of very little importance what principles were instilled into the minds of children, unless they had a good example before them at home. And by whom was the greatest influence exercised at home? By the mother, and not by the father. It was the mother who tended and reared the child from the earliest infancy. During the school period, and up to the time when the child left school, the father was almost always away from home, and consequently it was the mother whose influence was the most powerful. Difficult as it no doubt was to educate boys, it was still more difficult to educate girls, and they might depend upon it that that was the principal source to which they must look for the ultimate success of their efforts. The best training which could be given to one who was to be a labourer's wife—for it was the education of labourers that they were principally discussing—the best training which he could conceive of for the future mother of a labourer's children was that she should be in the first instance a good domestic servant. If they could only accomplish that object, they would be supplying a want which was very severely felt in the present day, and at the same time be laying a foundation for the better education of the children hereafter. Whether that was to be done by means of compulsory education or in some other manner it was not for him to say; and on that question he would only venture to observe that he thought it would be extremely difficult to carry out compulsory education in any form whatever. He had just been reminded that Lady Cowper had in Hertfordshire, to a certain extent, carried out the views which he had just expressed with regard to girls. Her Ladyship had for some time encouraged and assisted a school for the education of a certain number of girls, under a training mistress, in household duties, the teaching including washing, cleaning, cooking, and other things of that kind, and though there were great difficulties attending the maintenance of the system, it continued for a certain period, and he believed produced satisfactory results (Hear, hear).

Mr. S. SIDNEY (London) said their Chairman himself struck the key-note of the discussion when he said, in effect, that if they did not set about educating the people, the people would educate themselves. Nor would the education thus obtained be such as that Club desired. Penny and halfpenny papers now penetrated into every village in the kingdom. These papers were read, and the multitude picked up lessons from them; and if they did not educate the boys and girls of this country in habits of industry and in good principles, they would hereafter have cause deeply to regret their neglect. He was glad to find the Club a little in advance, on that occa-

sion, of the state of things some time ago. He had not heard any gentleman say that evening that he approved generally of education, but that the best man he ever had on his farm could neither read nor write (laughter). He did not, indeed, see how anyone who has been in the habit of travelling about the country, and putting a few questions to agricultural labourers, or to any other class of persons who earned their living by hard labour, could be satisfied with the present state of education. He ventured to say, at the risk of offending some of his friends present, that the state of education was, he would not say disgraceful, but most lamentable. There was a large number of persons who were not merely unable to read and write, but were in such a state that it would scarcely be right to compare them with savages (laughter), because savages must make certain intelligent efforts to get their own living by catching game, fish, and so on (renewed laughter). There were a number of boys and girls who were brutish to the last degree (cries of "Boah"). That language might perhaps be a little too strong (laughter); he should rather say that their stupidity was such as it was quite distressing to witness. He would appeal to those who had visited the Continent during the last few years as to the enormous advances made in education in France and Prussia. You could not speak to the man who drove you in a vehicle, you could not speak to a child who met you in the highway, without perceiving that education was distributed in those countries in a way in which it was not distributed in this country. It was easy to say that this was not true; but the fact was that these statements, carefully made as the result of his own observation, were borne out by reports made to the Government on the subject. As to the manner in which education should be carried out, he was not in favour of compulsory education, because he knew very well that unless the people were numbered and ticketed, as people on the Continent were, for the purposes of conscription, it would be impossible to carry out compulsory education. They were no doubt aware that wherever a working-man went in France he was liable to be stopped by a policeman and called upon to produce his papers, showing who he was, and all particulars respecting him. He (Mr. Sidney) was not at all prepared to sacrifice part of our liberties, even for the purpose of securing education. At the same time, he did not think any person could have paid serious attention to the subject without having become convinced that a very large proportion of the population would be greatly benefited by being taken away from the streets or the playground, and compelled to learn at school for a certain number of hours every day. They were all aware that in the manufacturing districts children were not allowed to work unless it was shown that they spent a certain number of hours daily at school; and he imagined that that was the only form of compulsory education now contemplated. There was great—perhaps insuperable—difficulty in applying this principle to an agricultural population; but it was very much to be regretted that the present state of things should exist. He did not himself see how the principle of the Factory Act could be applied to an agricultural population, but he should be very glad if it could be applied. Well, then, if they could not have the Factory Act or compulsory education, the question was, did they wish to improve education as it stood? If they wished to improve education as it stood they must seek to extend the voluntary system. It could not be contended that the charities of this kingdom had been sounded to its depths in connection with education. They had obtained enormous results from it, but they had not obtained enough. The fact was, that in those very districts where charitable people did not exist, or where people were not charitable, educa-

tion was most required (Hear, hear.) This was not a more vague statement of his. There were reports published annually with regard to the education of the kingdom; and on examining them it would be found that in numerous instances the school was supported by a very few persons. It constantly happened that the clergyman of the district and one or two other persons, it might be a benevolent lady or two, were the only supporters of education; and considering that there were farmers around, and other persons of standing, it seemed most extraordinary that the number of subscribers should be so small. This was a state of things which could not be allowed to continue, and it was not surprising, he thought, that on this question the public should have seemed disposed to take one of those sudden leaps to which Sir George Jenkinson so greatly objected. No one who had watched the progress of that question could doubt that public opinion was formed on this question, and that it would no longer be satisfied to leave a large class of the labouring population without any adequate provision for its education. For his own part he must say that he listened with great satisfaction to the paper read that evening by Mr. James Howard on that subject. He did not always concur in that gentleman's opinion on public questions, but in this instance he thought he had produced something exceedingly practical. They were all paying taxes every day for things which did not seem for a moment to bear comparison in importance with education. He lived in a neighbourhood which was not much troubled by thieves, yet he had to pay for police; and he maintained that to pay for education was to pay for police of the very best description (Hear, hear.) It might be easy to get up a very simple education for agricultural labourers, but it should be borne in mind that such persons were now brought more and more in contact with the inhabitants of towns, and hence they had only in many cases a choice between a bad education and a good one. They all knew, too, that a good thing was worth what it cost. If they wanted to secure a good education they must be willing to pay for it; and even if there should be some addition to local taxation, it might be compensated for by their being saved from their being surrounded by a large number of discontented, uneducated labourers (Hear, hear).

Mr. L. A. COUSMAKER (Westwood, Guildford) said among all the gentlemen present there were, he presumed, none who were not in favour of providing education for the agricultural labourer. The question was whether it should be compulsory or voluntary. An Englishman none of them liked to be compelled to do a thing; all of them preferred acting voluntarily. But the question arose whether, if the voluntary system had not in some cases done its duty, a compulsory one should be brought into operation. He thought the voluntary system had in many parishes worked remarkably well. What was education for the agricultural labourer? That was the question. In his opinion the giving a man an education which was unsuited to his station in life, or to the circumstances in which he was placed, did him more harm than good. To give a man an education which would not adapt him for the fulfilment of his duties, but which would merely make him discontented with his station, was not the way to benefit him. He thought that a great deal of the education of the present day had produced that effect. It was educating too highly. He was against not educating at all; but he was for educating according to the station of life in which persons were placed. The present system was to give children a knowledge of the sciences, and all that humbug (laughter)—a kind of knowledge which he objected to, in the case of the labourer, because it was of no earthly use to him afterwards. A purely secular education, or an education sepa-

rated entirely from religion, was in his judgment a very dangerous thing. He did not want teachers to enter into the questions of High Church or Low Church, this doctrine and that; but an education in which the broad principles of religion found no place he could not but consider would fail to produce any good effect. He agreed with Mr. Trethewy that the education of girls was more important than that of boys since the character of the family depended more upon the character of the mother than of the father. When the father was out, who was to have influence on the minds of the children but the mother? He thought they were all agreed that the voluntary system was preferable to a compulsory one. He for one felt certain that in parishes where the clergyman did his duty in this matter, and was supported by the leading occupiers, the work of education went on better than it would do under a compulsory system.

Mr. W. EVE (3, Union-court, Old Broad-street) said he concurred in the views of Mr. Sidney, and had risen to confirm what he said. He agreed with that gentleman that the education of the labouring classes in many parts of the country was a disgrace, and he really went so far as to endorse some of the epithets which he used (cries of "Bosh!"). He had expected to meet with such exclamations as that; but if those whom he addressed had seen some of the agricultural labourers, whom, he recently met with in Hampshire, they would have considered their condition a disgrace to the country. Mr. Read, in speaking as chairman, hit the nail in the right place. Education upon an improved system must, as he intimated, come; and whether they went with it or attempted to frustrate it, it would not much affect the result. It was of no use to contend against education. As regarded the question whether it should be voluntary or compulsory, he thought a mid-way course would be best. If farmers were not allowed to employ boys until they had gone through a certain routine of education, the effect would be that parents would be compelled to send their children to school (Hear, hear). In parishes where neither the clergyman nor the squire nor the farmers were doing anything to promote education, there must be some system of compulsion brought to bear, and the nation would not be satisfied without it.

Mr. J. A. WILLIAMS (Baydon, Hungerford) said he really thought the difficulty of this subject of education was a little beyond what people generally imagined. He thought the voice of almost every man in that room would be raised against compulsory education. But if they were not to have compulsory education, did not the whole question which was now being agitated fall to the ground? If education was not compulsory, would the poor man, who had nothing to dispose of but the labour of himself and his family, send his children to school till they were 11 or 12 years of age? How could he maintain them if he did so? He had been told that Mr. Fraser, who had been sent about as a Government Commissioner on Education, had made it known that in the Government scheme it was contemplated that no child should be permitted to go to work under twelve years of age, unless he had a certificate of merit showing that he had been sufficiently educated. Thus the voluntary system would be put aside altogether, and the parent could not do as he pleased with his own child. As to secular education, he could not conceive what the value of a class of labourers would be who had an education of which religion formed no part (Hear, hear). How farm work was to be accomplished if boys were to be educated up to 11 or 12 years of age, he could not imagine. Where were ploughboys to be got from even now? The boys wanted to hold plough now before they could well drive, and for the future we must expect none at all. Solomon said, "Train up

a child in the way he should go, and when he is old he will not depart from it." Give them a secular education without religion, and you would produce a class of men that would turn out refined rogues. If they trained up the agricultural labourer in the way he should go—they did not want to make him a Lord Chancellor, but to educate him for the position he had to fill—he might then be expected to prove an honest and useful servant.

Mr. J. TRASK (Northington Down, Alresford) said he should not have spoken had it not been for the observations of Mr. Sidney and one or two other speakers. Mr. Sidney said something about agricultural labourers being brutish and slavish.

Mr. SIDNEY said what he said was that there were agricultural labourers who were both brutish and stupid.

Mr. TRASK continued: As one of the largest employers of agricultural labour in Hampshire, he thought he might speak with a little authority (Hear, hear). Most of his men worked at piece-work; their accounts ran on sometimes for three weeks, sometimes for a month, and they could bring them to him well made up (Hear, hear). They would know if they were being paid a halfpenny too little, or were not properly dealt with. One speaker said that in certain parishes the voluntary system would, if the clergymen were backed by the squire and one or two leading farmers, be quite sufficient. He (Mr. Trask) thought so too (cheers). He knew nothing whatever about the dark alms of towns; they were very bad, no doubt, but he had no personal knowledge of them; but if Mr. Sidney would come and visit him in Hampshire, he would feel great pleasure in showing him agricultural labourers who were not brutes, and who were receiving something like fifteen or sixteen shillings a week (Hear, hear). He did not know where the last speaker but one (Mr. Eve) had travelled in Hampshire, but he presumed that it was in the New Forest (laughter). There were, perhaps, some parts of that county, he dare say, where the labourers were badly paid. There were, no doubt, some bad as well as good labourers there; but as to education, he believed the labourers generally were well educated for labourers: he did not say they were educated for anything else; but they were well educated for labourers, and he thought he should have been wanting in his duty if he had not stood up to defend his own county (cheers).

Mr. J. DUMBRELL (Ditchling, Haverpierspoint) said he came from the agricultural county of Sussex, and he could bear witness that the voluntary system had answered there very well. The statistical accounts of the schools of Sussex proved this. He would accept Mr. Sidney's challenge, and affirm that much education was not necessary for the man who had to get his living as a farm labourer. He felt quite sure that whether they had a voluntary or a compulsory system of education, if labouring men were educated more highly than they generally were, they would not be worth their salt (a laugh).

Mr. B. P. SHEARER (Swanmore House, Bishop's Waltham) said he thought the real question was not whether education should be compulsory, but whether it should not be compulsory upon the Government to provide education for the poor. It should not be made compulsory on parents to send their children to school, but it should be made compulsory on the Government of a great country like this to provide the means of education for the labouring classes.

Mr. C. HOWARD (Biddenham, Bedfordshire) said it seemed to be a general tendency of those who were unconnected with agriculture to tell farmers what were the requirements of their labourers (laughter). Such persons always seemed to know more about the farmer's business than

he did himself. Now he knew something about those who were employed in other branches of industry as well as those who were employed in agriculture, and, although he was not prepared to defend the state of the agricultural labourer's education, he had yet to learn that it was very far behind that of other classes of labourers. Mr. Coussmaker and other gentlemen, who seemed to have learnt their Church catechism uncommonly well, had said a great deal about the state of life in which God had placed men. How could anybody know, when a child was born, what was the state of life he was coming to? (laughter). Did their chairman's parents, he would ask, know when he was born that he would become a member of Parliament? (laughter). Let them educate children in the best way they could, so as to be able to fill any situation in life creditably. Some of the gentlemen present were doubtless born with silver spoons in their mouths, but others might not have been so fortunate (laughter). They might depend upon it that as a rule the best educated men on their farms were not the men who constantly visited public-houses, or applied to the Union, or found their way into gaols. He spoke after some degree of experience in this matter. He had taken some interest in education in the village in which he lived, and he would state positively that the best men on his farm were men who had some educational advantages. He thought Mr. Spearing made a mistake in advocating a very high standard for teachers in rural schools. The Government would, in his (Mr. Howard's) opinion, do well to give some assistance where there was not a properly certificated master or mistress in a village. In a village like his own they could not come up to the sum required by the Government for a certificated mistress. What was the consequence? Why they lost the Government aid, and of course the young person in charge of the school, and who conducted it very satisfactorily, had but a miserable salary—(a Member: What is the number of your scholars?) From 30 to 40. He was not in favour of compulsory education. He thought Parliament should say that no boys should be allowed to work in agriculture, or any other branch of industry, under ten years of age, and then leave the matter to right itself; the children would in that case in time be sure to find their way to school. He could not go beyond that. He agreed with Mr. Coussmaker that children should not be kept too long at school; he knew many men who, having gone to school up to the age of nine or ten, learnt quite sufficient to enable them to go through life comfortably; and he thought that if the education of the children of agricultural labourers went on properly up to that period, they would make better members of society than many who now occupied the same station.

The CHAIRMAN said: In bringing this discussion to a close, I will confine myself to a very few observations. My own opinion respecting education is that the present system should be encouraged and developed. I believe that the bill of the Government will very much increase the benefits which are already conferred by the State aid. Mr. Charles Howard says that in his parish—he might have said in three parishes out of four in the rural districts—there has been hitherto no aid on the part of the Government. The Government bill provides that if the number of scholars is less than sixty-five in a certain amount of population, there Government aid shall be granted, supposing the scholars to pass a satisfactory examination. Now I contend that that is the right direction to move in (Hear, hear). If a district cannot afford a certificated master, if it can only afford a dame to instruct the children, supposing the children to pass a satisfactory examination, the Government should not want, I contend, to inquire who has been the teacher, but should be willing to pay for

the results. Mr. Williams sketched from the Government bill a mis-statement which he appears to have derived from that talented gentleman, Mr. Fraser. I can only say that I have heard of no such provision as he has mentioned. I have the pleasure of knowing Mr. Fraser; and when Mr. Williams says it is the opinion of the Government that no child should be allowed to work under twelve years of age (Mr. J. WILLIAMS: "I heard that at Swindon"), all I can say is that I never heard that such was the case, and I think Mr. Williams must have been misinformed. I entirely object to what has been termed the compulsory principle. In the first place, I am quite sure that it would destroy all the benefit of the voluntary efforts that have been made. But I would add this—that I think that, in the case of a district which has shown that it is not willing to establish a school, a certain amount of pressure should be brought to bear upon that district by the Government. By all means encourage the building of schools, and let the Government say to a district which can afford a school, and has not got one, "We will make you help us to build a school out of the rates." In such cases, however, the burden ought not to fall on a particular class, the occupiers of real property. Night-schools are, in my opinion, of very essential service; and I was glad to hear them referred to this evening. I am convinced that, in order to keep up education, in order to improve the education of young lads, night-schools are almost indispensable. To indirect compulsion I have no particular objection: I agree with Mr. Charles Howard that it might be well for Parliament to declare that no boy should work under a certain age, but I think it would be much better for it to declare that no boy should work unless he could read and write. That may appear a rude way of stating my view on the subject, but I would rather have compulsion in that way than in the form of a direct compulsory attendance at school. Some persons think that poor boys should be kept at school to the age of thirteen; but if the middle-classes cannot always keep children at school as long as the parents could wish, how is it to be expected that the labouring-classes can do so? As regards assistance from the Consolidated Fund, it should be borne in mind that an occupying farmer contributes a considerable amount to that fund; and I would add that the labourer who smokes his pipe, or drinks his glass of beer, or purchases tea and sugar, thereby contributes indirectly to the taxation of the country, and has a fair right to expect Government assistance in the maintenance of a school for his children. With regard to religion, I do not think that the simple reading of the Bible is religion. Of course, the Bible is the foundation of all religion, but unless you build something upon the mere reading of the Bible you can never give a child a good religious education. As to leaving the religious instruction of the child to any one who pleases to give it, the result of that will probably be that a portion of the children will be cared for by some zealous person, and the rest will be left without any religious education at all. I was astonished to hear Mr. James Howard say that England is the worst educated Protestant country in the world.

Mr. J. HOWARD: I did not say that; it was a quotation from one of the leading journals of the day.

The CHAIRMAN: I believe statistics would prove that all Protestant countries, except Prussia, are behind us in this respect. Then, with regard to the difference between town and country, all I can say is that, whatever may be the opinion of the three gentlemen who have spoken to-night of the low state of agricultural education, and they all live in towns, those who live in the country ought to be the best judges. However badly educated labourers in the country may be in some places, there are back alums of London, Manchester, Bristol,

and all the great towns which are the hives of a swarming population, where thousands of children are so ignorant, so degraded, and so thoroughly wretched, that a comparison between such places and the country would be greatly in favour of the rural districts (Hear, hear).

Mr. SPEARING briefly replied; after which, on the motion of Mr. B. Marsh, seconded by Mr. H. Trotheway, a cordial vote of thanks was accorded to him for his introduction. A like compliment was accorded the Chairman. This terminated the proceedings.

EAST SUFFOLK CHAMBER OF AGRICULTURE.

A meeting of the members of the East Suffolk Chamber of Agriculture was held at Ipswich, when the chair was taken by Mr. F. S. CORRANCE, M.P., the president.

The PRESIDENT said the committee had come to the conclusion that the two subjects more immediately before the public were that of Education—the bill introduced into the House of Lords by the Lord President—and that of the Highways and Turnpike Trusts, Mr. Hugesen's Bill; but before discussing them he would ask the secretary to read a letter which had been received from the Society for the Encouragement of Arts, Science, and Commerce.

Mr. H. BIDDLE read the letter alluded to by the president. It enclosed the resolutions passed at the late Conference held in St. James's Hall, on the subject of Technical Education, and asked if the East Suffolk Chamber of Agriculture would send a representative to the committee then appointed.

The PRESIDENT said as the letter required an immediate answer, and there was not time to call a meeting of the chamber, he had replied that they, as a chamber, might give their assent to any such resolutions as had been passed by the Conference as an abstract proposition, but that they could not think it devolved upon them to assist by sending delegates or by pecuniary donations to such an object. They had an inchoate scheme of national education before them in the Government Bill, and in agricultural districts until they were satisfied upon that point it would scarcely become them to enter further into the subject of technical education (Hear, hear). He would take their further instructions on the matter, and if they thought Chambers of Agriculture were concerned in technical education, and that it was a matter of special importance to them, he would be very happy to reply in a different sense.

Mr. W. KERSEY moved that in the opinion of the chamber the answer already sent by the president was sufficient.

This was unanimously agreed to.

The PRESIDENT moved "That this Chamber accept the Education Bill as proposed by Government as a wise and well-considered measure for the extension of State aid to parochial and district schools for the poorer class, and expresses its satisfaction that although such aid is apportioned to secular results, no departure is made or required from the system of denominational teaching upon an established religious base."

Mr. R. L. EVERETT said it was dry work listening to Mr. Biddell reading the bill; and the more they listened, the less they understood it (Hear, and laughter); but the digest given by the president had satisfied them there was at least nothing to object to in the Government bill, but as they had hardly given study enough to the provisions of that bill, perhaps it would be wiser not to pledge themselves to support it at present, and to pass on to the next subject.

Mr. T. HAWKINS (Bentley) would second the president's motion, and spoke in favour of such a conscience-clause as that contained in the bill.

HON. J. M. HENNIKER-MAJOR seconded Mr. Everett's proposition, as he believed there were many present who had not had the opportunity of examining the bill, and it was an important subject and one which required deep thought.

Mr. HEMPSON (Erwanton) said that he understood that grants would be given to schools where the teacher was uncertificated in which the number of children was under sixty-five—just the contrary to Mr. Biddell's reading.

It seemed that Mr. Hempson was right, and Mr. Biddell's

objection without foundation. The president then withdrew his resolution.

The PRESIDENT next moved "That this Chamber disapproves of Mr. Hugesen's Bill, and, further, records its opinion that no change will be satisfactory which does not recognize the claims of ratepayers to assistance from some more general fund, or a revision of the present anomalous and unfair incidence of the Highway Rate."

Mr. HENNIKER-MAJOR could not see any reason for abolishing the turnpike-trusts, for at all events the roads, he believed, would not be so well kept up if thrown on the parishes as they were now. Considering that the turnpike-roads were made for imperial purposes, it would be fair to ask that the debts should be to a great extent paid off by the Consolidated Fund. With regard to the maintenance of the roads, he said at Halesworth that he did not consider that it would do to throw them on the county-rate, for the large boroughs would not pay for the use of the roads, and he could not see why those towns should not pay, not the full rate perhaps, but a fair share. He hoped in legislating on this subject they would have no piecemeal legislation.

Mr. W. S. GRIMWADE (Stonham) seconded the resolution of the chairman, which was carried.

Mr. HENNIKER-MAJOR said he was very anxious to call the attention of the chamber to a matter which he considered very important. It was the question of the sale of lucifer matches. Borough members were rather apt to laugh at the agitation which was raised on that subject, and think it of no consequence; but he had known a great number of cases in which disastrous fires had arisen from the possession by children of lucifer matches. Last year the Grand Jury at the Assizes of which he was foreman found a great number of cases of arson came before them, and considered it very important that something should be done to prevent the careless use of matches, and they made a presentment which was forwarded to the Home Office, and to which he had received a formal reply. Last year a special committee of the House of Commons was appointed on the motion of Mr. McLagan to look into the question of protection from fire, and two attempts were made by Mr. McLagan and Mr. Read to introduce a paragraph into the report of the committee to the effect that it was desirable to place restrictions upon the sale of lucifer matches, but both were unsuccessful. This showed how difficult it was to get the House to move in the matter. He had been in communication with Mr. Hardy on the subject, and he hoped when he returned to London that he should get an expression of opinion from a larger number of members of the House of Commons, and go to Mr. Hardy and the Chancellor of the Exchequer with a stronger case. Two modes of restricting the sale of matches had been suggested—either to impose a tax on the article or to license the seller, and the latter he thought the better, but that was a matter for the Chancellor of the Exchequer and the Home Secretary to settle. He asked the Chamber to give some expression of opinion on the subject by petition, and so strengthen his hands.

Mr. HEMPSON said two large premises belonging to members of his family had been destroyed by the careless use of matches.

It was arranged that a petition should be prepared to be signed at the next meeting, which the President said would be held on the Tuesday in Whitsun week, and the subject for discussion would be the condition of the agricultural labourer, county financial boards, and the rating question.

THE MARKETABLE VALUE OF SEWAGE.

"Some time in December, 1865, I was requested by the Directors of the Metropolis Sewage Company to report whether the Lodge farm were a suitable place on which to exhibit the value of sewage as a manure. It lies less than two miles from the outfall at Barking, where the whole of the North London drainage at present runs into the Thames." So writes Mr. J. C. Morton in the last number of the *Bath and West of England Society's Journal*; while the result of his report appears to have been that he accepted an appointment to manage this farm, with a view of demonstrating the marketable value of town sewage for agricultural purposes. From the position Mr. Morton occupies it has followed as a very natural consequence that the working of the experiment has since been continually before the public. The milk made at the farm has, if we remember aright, been exhibited at our cattle shows; the agricultural experience of town sewage in 1867 has been got together from the pages of the *Bath Journal* and circulated as a pamphlet; and the *Times* newspaper has just sent down one of its staff to Barking, who speaks to the length of some columns in the most flattering terms on the results already arrived at. We give this article in full; and as the writer had of course been previously armed with the essay, we may fairly take his account as an epitome of Mr. Morton's own conclusions on the subject.

For some time past the notion of making money by town sewage has been gradually fading away, and people have come again to regard the matter more in its primitive sense as simply a nuisance that must be got rid of in the best way possible. Mr. Mechi, to be sure, might still tell us that its value is incalculable, as most probably it is; and a sanitary commissioner, on some such clear a showing, order the immediate application of all the refuse of towns to the adjoining land. Indeed, at the opening meeting in January of the Society of Engineers, Mr. Baldwin Latham, the president, made the blessings of sewage one of the chief features of his inaugural address: "The sanitary works which have been carried out have had a marked effect in staying the ravages of disease and death, and of prolonging the average duration of life in those towns that have adopted proper measures. A great reduction has been made in the number of deaths from that painful and lingering disease that is so fatal to our country—which is an unlooked for success, and is probably due to the drying of the soil by works of sewage." So far so good; for, as we take it, no one will be prepared to question that getting rid of such matter is conducive to health. But Mr. Latham, like many other outsiders, cannot stop here, but must point his argument with the usual agricultural illustration: "The results of sewage irrigation are marvellous; large and luxuriant crops are produced;" and so on. This is easy enough to talk about; but does Mr. Latham know that so far such results are exceptional, or at any rate if marvellous, rarely profitable? Let us only reflect on what came of the Kennedy and Telfer talcs, and the tons on tons of hay, and the crops on crops of grass to the acre; and how these poor gentlemen were absolutely swept away in the tide, that taken at the flood led on to—failure. They grow sixty tons of grass per acre at Barking; and they do, or have already done, far more; for, as we learn from the *Times*, "the example is convincing enough to the neighbours; and arrangements are already being made for supplying the magic sewage to several of the surrounding farmers."

Here, undoubtedly, is a great result. Nine farmers out of ten who have tried sewage will tell you that it is really worth little or nothing beyond the supply of water for irrigation. The Metropolis Sewage Company, however, has been established with the special object of selling sewage; and as the surrounding farmers will have to pay for what they use, it may be as well to see how this business is to be set about. "The expense," says *The Times*, "of permanently ordering the ground for sewage culture is a comparatively light matter, varying from about 80s. per acre on favourable slopes to 40s. per acre on flat land where ploughing will mainly suffice, up to 80s. or 90s. per acre where more hand-labour may be needful." Naturally, such an expense at starting will be light or heavy according to the effects, and these are not as yet quite so evident from the reports as the neighbouring farmers would seem to admit. Mr. Morton himself says: "I need not go into our experience on the farm as large cow-keepers, by which an attempt was made to realize some of the experience of the London cow-keepers, who were able to pay us twenty-three shillings a ton for the grass we sold them. That is another subject altogether. Whether our business as cow-keepers was profitable or not, the fact remains that, under the circumstances, so much grass has been grown." In the outset we had thought that the sewage farm was to be especially tested by profitable cow-keeping; but the reference to this feature in the proceedings is curiously cautious, to say the least of it. Then, as to the application, *The Times* says that "on grass one brief dose lasts for perhaps a month; while for other crops it need not be repeated more than three or four times a year." The thing has been manifestly overdone at Lodge Farm, where, according to the manager, we "must cancel a very large quantity of the sewage applied in January and February, before the season of growth had arrived; because, under such circumstances, it must, at least in my judgment, have been nearly useless." Still, we hear from his critic, "there is nothing to preclude the winter flooding of meadows or the saturating enrichment of winter fallow, though the chief demand for the sewage will always be for application to growing crops. Probably the Company would charge season prices, raising the scale in spring and summer, and cheapening the supply in winter; and if any limit should be found to selling ryegrass at 18s. per ton, or to supplying London with milk at present prices, the production of beef at the commonly calculated rate of, say, 1½ stone imperial from every ton of grass, besides the cultivation of root and other crops, would leave considerably more than 1d. per ton as the worth of the sewage." And so "an extensive market" is thus conveniently obtained. Mr. Morton himself goes far to recommend that farmers should purchase the sewage when it can be had "at a cheaper rate," and store it "against the time when the plants require it." There is, however, something really horrible in the idea of storing sewage, the more particularly when we learn that, as it is, "on Lodge Farm it has occasionally come so filthy and offensive that, not only the tank, but the fields on which it has been lying are for the time a nuisance." Let us have some little regard for the health of the country as well as of the towns.

With the many previous flattering tales and terrible failures before us, it will be seen that we are not inclined to give all the credit to the Barking experiment which is already asked or accorded. The high character of Mr.

Morton notwithstanding, it will be well to bear in mind that the Lodge Farm is merely the advertisement of a Company which perhaps, under peculiar circumstances, may be able, or appear to do more, as most Companies can, than any man working altogether on his own account. Moreover, we dispute much of the principle on which this argument is offered. We have by no means as yet arrived at the time when town sewage can be treated rather as an article of marketable value, than as a nuisance to be got rid of. Still, we would have our readers judge for themselves by the results as given in the lengthy article we quote from our contemporary; though noticeably enough we are enabled to associate with this a paper from *The Engineer* which comes in almost direct contradiction to the Sewage Company's undertaking: "The 'Company' system is not generally applicable to sewage engineering. The whole management lies, or ought to lie, with the cor-

porate authorities of districts; and then, instead of confiding shareholders, eager to invest their hundreds and thousands in the scheme, the money is procured by what to many is the most objectionable method possible, namely, by rates." And, again, "Railway engineering was supposed to be the pioneer of fortune and wealth. Sewage engineering is simply a matter of sanitary regulation, moral régime, and physical hygiene. Men would rather sacrifice their lives, and the lives of those nearest and dearest to them, than miss the bare chance, the imaginary contingency, of doubling their capital." The continued Commission, of which Mr. Morton is a member, will have, above all other matters, to guard against the "risk to the public health," and as a contingency to inquire "how far such sewage or refuse can be utilised;" for "sewage engineering" or "sewage farming" must, after all, be mainly a matter of sanitary regulation.

THE SEWAGE FARM AT BARKING.

The problem to be worked out by the Metropolis Sewage and Essex Reclamation Company will be readily understood. The High Level, Middle Level, and Low Level Sewers, collecting the drainage of all London north of the Thames, meet at Abbey Mills, on the River Lea, where the low-sewer water has to be lifted by pumping-engines to the level of the other mains, and thence the three egg-shaped culverts, each of nine feet diameter, run side by side with a gradual descent, inclosed within an embankment built over a tract of grazed and garden-farmed marsh land that is lower than the Thames at high water. Four miles from Abbey Mills, and about two miles below North Woolwich, they reach the outfall close by the tidal stream called Barking Creek, where the Thames is half-a-mile in width; and here the continuous flow of foul water pours into covered reservoirs of ten acres area, which regulate the discharge, emitting the sewage through sluices when the tide is running seaward and has sunk below a certain level, but retaining it in the refilling cisterns when the river current sets inland. At this point the company has commenced works for conveying the whole of the sewage many miles eastward in a culvert, for distribution over the low-lying lands of South Essex. A couple of 8-foot tube syphons have been laid across Barking Creek; and the culvert, a brickwork tunnel of 10 feet diameter, has been completed for a mile and a half by a remarkable piece of engineering, which securely carries it through soft alluvial soil, resting upon peat, to the firm gravelly country beyond.

It is upon this gravelly land, slightly undulating, at an altitude of 12 or 15 feet above the sub-tidal marshes, that the company occupies Lodge Farm (a mile and a-half from Barking station), for the purpose of demonstrating by actual practice on an adequate scale what the agricultural value of the sewage really is. An iron-pipe of 15 inches diameter is led from the outfall at Barking Creek mouth, for a distance of one mile and three-quarters, to the nearest and nearly the highest point of the farm; a temporary steam-pump at the outfall, taking sewer water out of the mains just before they reach the reservoirs, and forcing it up to the farm with a total lift of about 35 feet. The whole of the irrigation works were designed by and carried out under the personal superintendence of Mr. John Chalmers Morton, the well-known editor of the *Agricultural Gazette*. The sewage, or grey-coloured, soap-suddy looking water, with an unpleasant but not powerful odour (except when rain after long drought flushes out deposits of foul matter from the London gullies), pours at the rate of 250 to 300 tons per hour into a series of wooden measuring-boxes holding 10 tons each; thence it flows into a small settling tank, which has to be cleared of sediment a few times in the course of a year, and out of this directly into the irrigation main carriers. These consist, for the most part, of small, open ditches, though for one or two fields they are constructed of open wooden troughs about 18 inches wide by 9 inches deep, mounted upon trestles and tarred, costing 2s. 6d.

to 3s. per yard. There is a perceptible though very slight smell from these open sewage channels, but positively none at all from the surface of the fields where watering is going on; and an offensive odour which may greet the visitor when the wind is in a certain quarter comes from some distant alkali works. The farm comprises somewhat over 300 acres, nearly all arable, most of it a thin poor soil upon gravel, with a small portion of friable loam of better quality, and the whole enjoys a natural under-drainage through a porous subsoil. The surface gently undulates with about 5 to 10 feet differences of level, and an extreme of about 20 feet between the highest and lowest altitudes. The larger half of the farm, lying above the present sewage level, is cultivated in the ordinary manner; the cropping for this year consisting of 40 acres of wheat, 4 acres oats, 20 acres potatoes, 20 acres mangolds, 8 acres cabbage, while 12 acres are under old pasture, and considerable spaces are occupied by the large cow-sheds, the farm-yard, and premises. For the credit of the management it may be said that all the fields look well, the plants are good, the ground is clean, the few fences are well kept, the roads are in good order, and the whole is so well supplied with manure from the cow-sheds, that, while a considerable quantity of manure has been sold off, no artificial or any other manure has been purchased for 12 months, and the bill for artificial foods is very moderate, considering the number of cows kept in milk and fed for market. Yet two years ago the whole farm was in a very foul and impoverished condition.

Preparations are in progress for supplying a head of sewage-water at rather higher than the present level, so as to bring an additional portion of the farm under irrigation; but for the present the sewage farming is practised upon 90 acres lying in one continuous area below the level of the tank, and with a surface gently declining from it, the sewage being conducted over the whole by natural gravitation. Where the slopes are sufficient the carrier gutters follow the contour lines of the surface, and are crossed at intervals with smaller runnels called feeders, the liquid being used over again upon successive plots on the catch-water plan. Most of the flatter land has been laid out in one-acre, two-acre, or three-acre plots, each about 50 to 60 yards in breadth and slightly highest in the middle, so that the sewer water trickles with a fall of about one in 140 from the gutter on the ridge to the drain in each furrow. Those beds were formed by means of a common plough, throwing all its furrows one way, followed by a subsoil plough, and this again by spadesmen, who dug out the loosened gravel from the higher places and barrowed it into the hollows. Three teams and 23 men cast into shape one acre and a-half per day, after which came a final "sizing" and smoothing by hand tools. But on one part of the farm, where the soil is somewhat deeper, a far simpler and cheaper method was adopted. By three successive ploughings, a little harrowing, and the levelling of some few spots with the shovel, the horizontal ground was gathered up into ridge-and-furrow lands of about 33 yards

width, and five or six inches higher along the ridges than in the furrows. And thus Mr. Morton's practical talent succeeded in permanently shaping the surface for sewage irrigation at a total outlay of under 40s. per acre. So that when once the sewage is delivered upon a farm of suitable configuration (and there is nothing physically exceptional about Lodge Farm), the expense of permanently ordering the ground for sewage culture is a comparatively light matter, varying from about 30s. per acre on favorable slopes to 40s. per acre on flat land where ploughing will mainly suffice, up to 80s. or 90s. per acre where more hand-labour may be needful. Then, while the permanent works are comparatively inexpensive, the operation of applying the liquid manure from the carrier ditches to the surface of the land is so easy and expeditious that it surprises everybody at the first view. Draw a little slacker or door, and the dirty-water fills a little grip or runnel; dam this, wherever you please, by simply sticking a spade in it, and the water overflows right and left, wetting the ground and watering the plants. The thirsty soil drinks in the liquid with a bubbling sound: in ten minutes or more the water will have spread across the whole breadth of the plot, and you then shift the spade to a place lower down the course of the runnel. You thus water one patch after another, till in an hour, or an hour and a-half, an acre of land has sucked in its 300 or more tons of sewage; and, in fact, a man gives this dressing to five or six up to ten acres in a day, costing 3d. to 6d. per acre. On the grass, one such brief dose lasts for, perhaps, a month; while for other crops it need not be repeated more than three or four times in a year. Sewage husbandry appears to involve no labour, either of men or horses, beyond that of ordinary management. For instance, of the 90 irrigated acres 60 are under Italian ryegrass; the ploughing, harrowing, and rolling of the seed-bed, and the three or four bushels of seed, cost about 50s. per acre, and, as the plant lasts for two years, the average expense of the tillage is only 25s. per year. Then there is absolutely no weeding upon the 60 acres, for, at first starting, the sewage killed outright a profuse crop of annual weeds, and the ryegrass is so thickly set, and grows with such vigour, that whether springing up after a cutting, in any stage of growth, or ready for the mower, it gives no other vegetable a chance of existence.

To sketch the history of all the different compartments of cropping since the first sewage wetted the land in October, 1866, would occupy too much time with details; and yet a mere general statement of the total quantity of liquid applied and of produce raised in a year would be quite illusory. For, of the 55½ acres of Italian ryegrass in 1867, a large part was unavoidably sown too late for yielding a full number of cuttings; only 13 acres really had a fair trial, and the year's produce here amounted to over 60 weighed tons of grass per acre. Then, of the 300,000 tons of sewage measured into the tank, a very great proportion must have filtered down through the gravel bottoms of the carrier ditches and have been utterly lost—a source of waste now lessened by the gradual sealing of the interstices with sediment. Mr. Morton, in his faithful report of December last, considered that only three-fourths of the sewage was actually utilized upon the land; and allowing 12 or 13 tons of Italian ryegrass to be the probable yield per acre on such land, without manurial assistance and the dry Essex climate, he said:—

“We have proved that every hundred tons of sewage really used during the past year have produced, under circumstances of average favourableness, one ton of grass over and above the natural and unassisted growth of the land—that is, over and above the yield needed to pay an ordinary rent and an ordinary farm labour bill.”

To show the moderation of this statement, take Plot III., measuring 3 roads 35 perches, of very poor soil, and the ryegrass sown two months too late—namely, in April. In seven dressings between the 4th of May and the 21st of September, 2,500 tons of sewage were sent to this plot (though probably less than 2,000 tons ever reached it); and four cuttings, from the 6th of July to the 26th of October, gave a total of 48 tons 8 cwt. If the natural produce on such land would have been as much as 12 tons of grass, which is unlikely, there was an increase of 36 tons of grass from 2,500 tons of sewage—that is, one ton of grass for each 70 tons of liquid. The plant was not exhausted in 1867, for it has given another cutting this spring—namely, on the 12th of March; and it is at the present moment a very thick, high-standing crop, again ready for the scythe. A plot sown in February, sewaged for

the first time in April, and again after each cutting, yields a first cut in May, four or five more crops during the year, and will certainly be cut six or seven times during the second year; this amounts to twelve or thirteen crops, averaging about 9 tons each per acre, or a total in two years of 100 to 120 tons of grass from one acre. What is the produce worth? Some of it is sold on the ground at 1s. to 1s. 3d. per perch, equal to about 18s. per ton, the customer cutting and carting it away. Some is mown and sold loose at 18s. to 20s. per ton, the purchaser fetching it; some is tied in bundles and delivered in London at 23s. to 25s. per ton. And a great number of the cows, feeding upon literally nothing else but this ryegrass, give daily 10 to 12 quarts of milk a-piece, worth 1s. 8d. to 2s., for 1½ cwt. of grass. Valuing the grass at 18s. per ton, Mr. Morton's deduction of 1 ton of grass from every 100 tons of sewage shows the liquid to be worth about 2½d. per ton; and in the case of Plot III., one ton of grass at 18s. for 70 tons of sewage makes it worth about 3d. per ton. The result is abundantly satisfactory; for the company would consider itself well paid by one penny for each ton of sewage delivered upon any farm lying along the route of the proposed culvert. Thus, 40 to 50 tons increased yield of grass per acre, worth £36 to £45, can be obtained for 4,000 or 5,000 tons of sewage costing £17 to £21.

Whether all the ryegrass should be sown in early spring, cut for two years, and then ploughed up in late autumn for a crop of “bunching greens,” of wheat, rye, winter oats, or beans—or whether autumn-sowing, winter-flooding, cutting up to Christmas (which has been done), getting the earliest possible cutting in spring, and numerous cuttings during only a single year, leaving the plant too weak to do well for a second year, be the more practicable course—is a matter for experiment. It is a fact that a hot-weather growth has yielded 1½ tons in five weeks after mowing.

The other cropping now under sewage comprises five acres of wheat, four acres of rye, two acres of winter oats, one acre of cabbage (a splendid crop, to be succeeded by transplanted mangolds), ten acres of more garden-like crops, and eight acres of old meadow. The garden crops include two acres of flourishing strawberries, and plots of potatoes, carrots, parsnips, Portuguese onions, flax, rye, canaryseed, mangolds, red beet, and sugar-beet. One acre of this field was dressed with London stable-dung in the spring of 1867; drumhead cabbages were planted in 18-inch rows, with alternate rows and alternate plants of small market cabbages: these latter were sold for £14 per acre; the drumheads for £10 per acre—that is, £24 worth off one acre. The land was sown with rye in October at a cost of £2 for tillage and seed. On January 18th of this present year it had 300 tons of sewage; on March 7th, 400 tons more; and the forward green rye, 20 inches in height, is now sold for £10 the acre, the purchaser cutting and carting it off. This piece of ground will be ploughed, mangolds dibbled in May, some 1,200 tons of sewage applied during the summer, and from experience of the crops on other plots, the yield will probably be 40 tons per acre, readily sold in heaps on the land at 20s. per ton. A plot of wheat last year, watered three times in spring and early summer, yielded at the rate of 43 bushels per acre; whereas contiguous and precisely similar land, treated in exactly the same way, minus the sewage, yielded only 29 bushels per acre.

The results certainly prove in general that the yield of many crops beside Italian ryegrass may be amazingly increased, for a comparatively small outlay, by the use of sewage; that this very diluted fertilizer, procurable for 1d. per ton, is actually worth double that price when used upon Italian ryegrass, and that fortunes must be made out of husbandry which doubles, trebles, nay, more than quadruples the ordinary produce, with a return of cent. per cent. upon the outlay. As might be expected, the example is convincing enough to its neighbours; and arrangements are already being made for supplying the magic sewage to several of the surrounding farmers.

It should be borne in mind that the practice on Lodge Farm has been designed to show a profit from the use of sewage, not to determine how large a quantity can be disposed of upon a certain acreage without detriment to the soil. Ninety acres here utilize about one 400th part of the total volume of sewage issued at Barking Creek outfall; but it does not follow that 36,000 acres will be needed for consuming the North London drainage. Ninety acres form the irrigated portion of Lodge Farm, which is more than 200 acres in extent; but it

does not follow that farms occupying an acre of 80,000 acres will be necessary for taking 400 times the amount of sewage applied here. On Lodge Farm twice the quantity actually used would have done no harm; it would only have been wasted. There can be no difficulty at all about providing enough ground as a filtering and deodorizing bed able to swallow up the 330,000 tons of sewage which the company will be bound to receive into its culvert every 24 hours. The corollary from the Lodge Farm experiment is that the whole might be disposed of profitably. More tenacious land would retain a larger share of the fertilizing constituents of the sewage; and sheer sand may be saturated with the filthily liquid till it bears good root crops or ryegrass, yielding 12 up to 20 tons at a swath, repeated every fourth or fifth week. At least this is what has been done and is being done upon a trial acre of the Maplin Sand, containing 88 per cent. of siliceous and only 1 per cent. of clay. Hence there is nothing to preclude the winter flooding of meadows or the saturating enrichment of winter fallow, though the chief demand for the sewage will always be for application to growing crops. Probably the company would charge season prices, raising the scale in spring and summer, and cheapening the supply in winter; and if any limit should be found to selling ryegrass at 18s. per ton, or to supplying London with milk at present prices, the production of beef at the commonly calculated rate of, say, 1½ stone imperial from every ton of grass, besides the cultivation of root and other crops, would leave considerably more than 1d. per ton as the worth of the sewage.

The market for the sewage should be sufficiently extensive. From Barking Creek outfall the culvert will lead the sewage by a gentle descent for three miles and a-half inland to Five Elms, where powerful steam-pumps are to give a lift of 40ft. From that point about 7,000 acres, for the most part of light gravelly land with a porous subsoil, can be reached by the natural gravitation of the sewage. At Uppminster, four miles and a-half beyond Five Elms, a second lift of 30ft. (the two lifts requiring engines of twelve hundred horse-power) will enable the sewage to run 14 miles further on to Pitsea; and the culvert completed to this point, 22 miles from the outfall, would command 60,000 or 70,000 acres, of which a considerable proportion is light land, with an open subsoil, in a low country inhabited by occupiers and cultivators of farms, and without towns. Still, if it would not be politic for the whole scheme to depend upon a fluctuating demand for sewage along the line, the Lodge Farm experience does appear to warrant the company in gradually proceeding to irrigate large areas of land under its own control. The company has a succession of the whole of the sewage for 50 years, and it has nine years from the present time in which to execute the works. But if the Thames is to be sweetened within a reasonable period, if all public and private sewerings through both banks of the river are to be stopped, if the formation of a bar in the

channel at Barking outfall is to be prevented, the public are concerned in accelerating the acquisition of that profit which the sewage is proved able to secure.—*Times*.

THE SEWAGE FARM AT BARKING.

TO THE EDITOR OF THE TIMES.

SIR,—The only correction I will ask you to make in the very satisfactory account which you have given of the Metropolitan Sewage Company's experience on their farm at Barking is one rather of general impression than of detail. If anyone has gathered from your very complimentary report that great "practical talent" is needed for the direction and superintendence of such operations as have been so successful at Lodge Farm, I wish to assure him that a sufficient quantity of sewage will cover a multitude of agricultural blunders. The economical use of it in the cultivation of seed crops is no doubt still a problem, and it may be through many seasons of expensive experience that we shall ultimately learn how to employ a sewage-created fertility with certainty and success in the growth of grain; but for all green and succulent growth nothing can be easier or more certain.

I have to-day been over Mr. Blackburn's farm at Aldershot, where the waste and drainage of a population of about 10,000 are delivered over as poor a sand, I believe, as even the Maplin, at Thames mouth; and there the water is carried, as at Barking, in surface runnels, along either ridge lines or channels in contour, made in the easiest and cheapest way; and over the edges of these channels it trickles down the slopes, feeding Italian ryegrass, or, it may be, cabbages or potatoes, on its way. And this poor silicious sand is on some of Mr. Blackburn's fields now covered with as fine a coat of Italian ryegrass as I have ever seen, even on soil of the richest natural fertility and under the most liberal ordinary management.

There is now sufficient evidence in many places to make it certain that, for mere leaf and root growth, sewage flowing over natural or artificial slopes, as with very little "practical talent" it can easily be made to do, is entirely trustworthy as the cheapest and most efficient fertilizer that is known. And such experiments as have hitherto been made with it in the growth of wheat make it very probable that, properly administered, it will be at least as useful and as profitable when applied to a grain crop as it certainly is when used upon a grass crop.

I must add in reference to the present satisfactory condition of the Barking farm, which your reporter has very justly praised, that the credit of that belongs to the Hon. Henry Petre, who has had the sole responsibility of the company's operations there since last autumn.

I am, sir, yours faithfully,
Harrow-on-the-Hill, April 15. J. CHALMERS MORTON.

SEWAGE ENGINEERING.

It must be admitted that the utilization of sewage, in so far as its direct application to land is concerned, has made only a little progress, altogether incommensurate with the large sums of money expended, as it was imagined, with the view of furthering that object. The management of sewage, its utilization, and its application as a fecundating substance to the soil, together with the arrangement of the various and complicated details attending the process, may be justly regarded as a novel branch of engineering, and one of which we really have but a very limited and imperfect knowledge. It is not too much to assert that it opens as new and as wide a field for the exercise of professional skill and ability as ever raised the expectations of the engineer at the introduction of railways. There are, however, several important points of difference to be noticed between the circumstances connected with the rise and progress of the two branches. Railways, like Minerva from the brain of Father Jove, sprang at once into full commercial existence; they had no youth, no infancy. Companies were formed and capital raised with a rapidity unparalleled in the annals of national finance; the most extravagant sums were paid to

hostile proprietors, and an influential opponent could command his own terms. Nor was all this reckless and imprudent liberality confined to satisfying—we might say gorging—those whose interests and opposition might prove detrimental to the project in hand, but the same generosity was extended to all those in any manner engaged in the concern. Men who could scarcely read the staff received per diem what would now be considered a fabulous wage, and many "assistants" set up their level for the first time upon the route of an intended line. Contrast this with sewage engineering. The latter, after narrowly escaping strangulation at its birth, is still in the first stages of a protracted infancy, and it would be impossible to predict the period of its arrival at maturity. But few companies are created, and the capital required for its development is obtained with difficulty. In fact, the "company" system is not generally applicable to sewage engineering. The whole management lies, or ought to lie, with the corporate authorities of districts; and then, instead of confiding shareholders, eager to invest their hundreds and thousands in the scheme, the money is procured by what to many is the most objectionable

method possible—namely, by rates. And when it is borne in mind that large sums raised in this manner have been literally wasted on abortive projects and unproductive schemes, it is no wonder that the forced contributors rebel against their obligations, and murmur at the misdirected expenditure which has no other result but to prove incontestably the incompetency of those in whose hands the scheme had the misfortune to be placed.

We have remarked that sewage engineering presents a wide field to the profession; but it is to be regretted that in a pecuniary point of view it does not offer (at any rate to a portion of the profession) an equivalent remuneration for their services. There is no pity to be expressed for local boards, or mercy to be shown when they involve themselves in difficulties of an engineering nature owing to the miserable terms they offer for professional assistance. A town close to London could be mentioned, where sewers were constructed and pipes laid, the levels of which were subsequently discovered to be totally irreconcilable with those of the other portions of the system, and the whole of which had to be reconstructed and relaid. The fault is apparent, the culpable party easily traced, but the onus rests upon the shoulders of the authorities who made the selection. The question that local boards ask themselves, when about to appoint a resident engineer or surveyor, is not What is a fair remuneration for the services of an able, experienced, well-educated man? but What can we get a man for? Unfortunately, the constitution of local boards is by no means the best for deciding respecting the qualifications, either in a professional or other sense, of a candidate; and to judge from the wretched stipend attached to the office, a foreman of pipe-layers would be the most eligible *parti*. A little reflection will point out the reason why sewage engineering is in a state comparatively so backward, when regard is had to the sudden vitality diffused in its locomotive predecessor. In the one money was to be made; prospects of enormous dividends beguiled the shrewd and clever as well as the simple and unsuspecting shareholder. The possession of a certain number of shares was a passport to wealth, and director was but a synonymous term with that of millionaire. In the other no similar allurements are held out. It is scarcely yet established that any sum expended will recoup itself, and consequently an investment is looked upon almost in the same light as a forlorn hope. Nevertheless, in the abstract, there can be no doubt about their respective degrees of importance; and the prominence attached to the former—one which probably will never be accorded to the latter—is easily explained upon the grounds that men, as a rule, pay but little attention to questions of really a vital nature. Railway engineering was supposed to be the pioneer of fortune and wealth. Sewage engineering is simply a matter of sanitary regulation, moral régime, and physical hygiene. Men would rather sacrifice their lives, and the lives of those nearest and dearest to them, than miss the bare chance, the imaginary contingency, of doubling their capital.

In London the problem of getting rid of the accumulated sewage of more than three millions of people has been successfully solved, but not a step has been gained with respect to its utilization. The same statement holds good for several other towns; and if we except the everlasting "Craightenny meadows," and the eternal Croydon, we shall find that little or nothing has been done towards the accomplishment of so desirable a result. It is only in comparatively rare instances that the principle of gravitation can be rendered available; and when that facility is afforded, the necessary land is frequently difficult to obtain, not merely from its favourable position for building and other purposes, but from the fact being soon known that only that land and none other will enable the principle to be applied. From this circumstance it will often be found more economical to employ pumping in localities where the principle of gravitation might be employed, solely because the former would give command of a greater range of district, and allow of a choice in the land to be irrigated. There is one point of similarity between railways and sewage irrigation that ought not to pass unnoticed. Both have their opponents, although the land opposition is not so virulent in the present as in former times. The great foe to sewage irrigation is the earth-closet, or, as it may be appropriately termed, the portable cesspool system, the promoters of which rashly conclude that, because it answers tolerably well—

as a "*pis aller*," in fact—in isolated farm-houses and small out-lying districts, it could be applied successfully to large towns, and even to the metropolis itself. We pity any corporation that commits itself to the system, and requires the first desideratum in dealing with sewage, which is to remove it instantaneously and thoroughly, from the neighbourhood of human dwellings. Any receptacle that permits excrements to remain in it, no matter for how short a period, is to all intents and purposes a cesspool, whether the name of earth-closets, reservoir, commode, or any other name be given to it with a view of concealing its true character.

An example of the utilization of sewage worthy of the name is likely to be afforded by the town of Norwich, the corporation of which have wisely refused to adopt, or even countenance any other principle of utilization than that of irrigation. Considering that the present population of the town numbers somewhere between eighty and ninety thousand inhabitants, it is quite time that the matter should be actively taken in hand. With this object, about 12,000 acres of land have been engaged, which will permit of the process of sewage irrigation being thoroughly tested upon an adequate scale, and the result will tend to solve, one way or the other, this great national problem. It is of course not intended to irrigate all the fields at once, as is apparent from the disproportion of area to the population. The range of or the ratio between the two items may be considered as varying from fifty to one hundred and fifty persons to the acre, and the first of these numbers is that recommended by the Sewage Commission as effecting the maximum utilization of the fertilising medium. Generally this rule is not adhered to, and there are instances when ten times that amount and more is apportioned to the unit of area. It will be scarcely necessary to state, after mentioning the quantity of land at the disposal of the corporation, that pumping was found to be indispensable, and contracts have been let for the erection of engine-house and machinery amounting to nearly £14,000, and the main and pipes include a sum of £4,000 in addition. The excavation is of a very heavy character, averaging about 30ft. in depth. There is also a long length where the depth from the bottom of the invert to the surface of the ground is between 60ft. and 70ft., and the maximum depth is 83ft. between the same points.

To predict the success of any scheme or project upon a large scale, simply because it has been attended with advantageous results when tested on a smaller, has been repeatedly proved to be a false conclusion in numerous other matters than sewage engineering. The converse of the argument is also true, and it would be illogical to assert that sewage irrigation upon a large scale may not be yet a remunerative investment for capital, although it has failed in the case of many small towns and rural districts with populations of six or seven thousand people. Similarly to farming, sewage irrigation requires to be applied upon a large scale, in order to give it a fair chance of success; and it is not until examples of magnitude and importance are before us that we shall be in a position to judge of its real merits and demerits, and to finally decide upon one general plan or system which would merely require the usual modifications to be adapted to any given locality or district.—*Engineer.*

BEDFORD POLITICS.—For some time past the Conservative party has reckoned on having as one of its representatives for this borough Mr. James Howard, so well-known to the agricultural and engineering world, and last year presented a requisition, numerously signed, calling on him to stand as a candidate. Mr. Howard, though a traditional Tory, declined the invitation; among other reasons, on the ground that his views on many important political topics were much in advance of those avowed by the party. Notwithstanding this reply, it was generally hoped that Mr. Howard's scruples would be overcome. So far from that being the case, however, the subsequent policy pursued by the Government has determined Mr. Howard to withdraw altogether from the Conservative party and to join the Liberal ranks.—*Daily Telegraph.*

SALE OF THE MILCOTE SHORTHORNS.

The dispersion of a herd for the third time took place at the farm of the well-known and successful breeder, Mr. J. C. Adkins, on Wednesday, March 25. The weather was all that could be desired, and the company one of the largest got together for some time. If the number of local visitors is a criterion of the respect in which Mr. Adkins is held in his own neighbourhood, then indeed is he greatly respected. No one can go to Milcote, and see the stock and its management, and the beautiful condition of the land, without knowing that Mr. Adkins must be a "man of mark" about home. As a shorthorn fancier he has now during rather a long experience been a great admirer of Sir Charles Knightley's blood, which appears to be still rising in public estimation—at least, to judge from the prices realised at recent sales. The cows and heifers were in very nice condition—perhaps the old cows might have been better a little less fat; but upon the whole the animals looked in a healthy, blooming state. The younger bulls were hardly up to the mark for Mr. Adkins' interest; but they looked better in the ring than in their sheds, and will doubtless improve in the hands of their purchasers. Among the numerous company, which was computed at over a thousand, there were present—Messrs. Tracey, Clayden, Cheney, Fawcett (Scaleby Castle), Leney, J. P. Foster, Downing, Sheldon, Sartoris, Beauford, C. Howard, Torr, M'Intosh, Rich, J. K. Fowler, Woodward, Graham (3), Saville, Adcock, Gandern, Adkins, G. Garne, M. Savidge, Styte, Rand, Lythall (2), How, Winnall (2), C. Randall, T. Horley, Baldwin, Tait for Her Majesty, Culshaw for Col. Towneley, Finlay Duu for Sir G. Philips, Boyd, and the agent of Lord Feversham.

The luncheon being concluded, Mr. Stratford at about half-past one mounted the rostrum, where, in opening the proceedings, he stated as his belief that Mr. Adkins would be handed down to posterity "as great a man in his line as the one lying in yonder churchyard," pointing in the direction of Stratford-on-Avon!

As will be seen by the prices annexed, the Sweethearts, Charmers, and Florets—numbering 26 in all—of Sir Charles Knightley's strain, were most in request, and fetched the highest prices, with the exception of Princess, a cow bred at Wolviston, and of the same descent as the famous Belvedere (1706). The first lot was Sweetheart 2nd, now in her 17th year; and the old cow, daily expected to calve, bears her age well, and walked as gaily as possible in the ring. This remarkable animal has been sold three times—in 1860 at Milcote for 70 gs., in 1864 at Clifton Pastures for 50 gs., and again the other day at her original price. Mr. Finlay Duu purchased her for Sir G. Philips. The cow Princess, just alluded to, is said to have been badly reared as a calf; she is rather small, on short legs, of good hair and touch, but with somewhat upright shoulders, though still exceedingly stylish in her appearance; while she was introduced by the auctioneer as "one of the best-bred Shorthorns in England." After a close contest between Mr. Boyd on the part of Mr. M'Intosh, and Mr. Cheney, of Gaddesby, she was knocked down, amid the cheering of the company, to the latter for 346 guineas. Mr. M'Intosh comforted himself by purchasing Science, a good two-year-old—a sort which has done so well at Havering—and one nicely adapted for the recently-purchased American bull Duke of Geneva 3rd. Concord finds her way to Towneley; she was put up at 50 gs. and soon reached 80, when Culshaw for the first time said

"one," and ultimately secured her at 90 gs. Mr. Tait, for her Majesty, after some sharp competition, obtained Floret and Honesty for 70 and 81 guineas. These animals will cut a good figure even in the Home Park. Mr. J. K. Fowler, true to his love of the Knightley sort, takes to the Vale of Aylesbury, Seraph, a cow of nice character, but a little hard in the touch; as also a promising young bull, Hardicanute, of the Floret tribe. Mr. R. D. Davies, of Mere Old Hall, who had his representative at the sale, has Harmony, a rare cow of good quality, at 90 gs. Harebell, a great good cow by Captain Gunter's 4th Duke of Thorndale, goes to Mr. Sheldon, of Brilles, at 120 gs.; while Songstress, of the Sweetheart family, a grand one with a bag like filling the pail, goes to Rushden Hall where Mr. Sartoris is starting a new herd. Mr. Adcock from the same neighbourhood, who is a lover of Bates and Knightley, purchased Heartsense, a cow of great substance. Lord Feversham, it appears, intends to follow in the footsteps of his father, and have some of the right blood, as Hollyhock, a good sort of heifer of the Floret tribe, fell to his agent's bidding, and travels North, for 60 guineas. Mr. Leney, full of "Kentish fire," was not to be denied Maryland and Spangle at 90 and 160 guineas each. Maryland is one of the last animals Sir Charles Knightley bred, and she was bought by Mr. Adkins at the last Fawley sale; but having been badly reared, she has not much "hand"; while Mr. Leney, with his large choice of Bates' bulls, will soon put that right. Spangle is a good heifer with well sprung ribs, though her touch might also be a little better; she will, however, cut a good figure in the numerous and valuable herd of her new owner. Mr. Fawcett, of Scaleby Castle, bought Sympathy, Diana, and Constancy. There was a very sharp competition for these beautiful heifers. Diana is from Edith, the cow Mr. Adkins retains, and, like Sympathy, is a heifer of very fine character. Constancy, by Lord Penrhyn's 3rd Duke of Geneva, was one of the gems of the herd, and Culshaw, who had already secured her dam, was very hard to beat; but she goes still farther north than her mother. Mr. Saville who is establishing a herd at Ingthorp, was fortunate in securing Frailty, of the Frill tribe, a good stylish heifer, and cheap at 50 guineas, as also Heliotrope, of the Floret family, a very promising heifer, for 65 guineas. In this one, especially, Mr. Saville will find he has bought the right sort. The bull which commanded all attention was Patrician, a son of the highest priced cow, Princess. He is certainly one of the best bulls seen out for many a day, for he has great substance, good top, deep girth, rare touch and hair, and good thighs; is of masculine appearance, and altogether a stylish animal, possessing, beyond all these essential qualifications, a sweet temper. Paragon, also out of Princess, by Sir G. Philips' Barleycorn the Younger, found a purchaser in Mr. Corbett for 100 guineas. His present appearances are against him; but with such a parentage, there is every prospect of his growing into a good animal. Spectre, another bull, was purchased by Mr. Charles Howard for Mr. C. Sewell Read, M.P. for Norfolk; and a very growing, improving calf he is, of nice hair and quality; and when it was announced that he was purchased for the "Farmers' Member," considerable cheering broke out. The bull calf of Princess, calved in January last, was purchased by Sir G. Phillips. Mr. Adkins, with the permission of the company, retained Edith, a good big cow, and Lot 3 of the bulls, as the commencement of "another herd"; and it is only to be

hoped he may have his health to establish one as good as that just dispersed. The following is a list of the prices and purchasers, with the averages.

COWS AND HEIFERS.

Sweetheart 2nd, white, calved December 27, 1851; by Earl of Dublin (10178), out of Sweetheart by Accordion (5708)—Sir G. Philips, 70 gs.

Concord, white, calved September 1, 1857; by Londonderry (13169), out of Charmer 3rd by Earl of Dublin (10178)—Col. Towneley, 90 gs.

Goodness, red and white, calved October 13, 1858; by Lord Hardinge (13193), out of Beauty 2nd by Revolution (10713)—Rev. C. W. Holbech, 46 gs.

Frippery, red and white, calved December 27, 1858; by Mameluke (13289), out of Young Frill by Broughton Hero (6811)—Mr. J. Fawcett, Scaleby, 51 gs.

Floret, red and white, calved January 27, 1859; by Douglas (12714), out of Florimel by Duke of Cambridge (12742)—Mr. Tait, for the Queen, 70 gs.

Princess, roan, calved September 15, 1860; by General Havelock (17958), out of Countess by Earl of Chatham (10176)—Mr. E. H. Cheney, Gaddesby, Melton, 345 gs.

Alice, red and white, calved March 11, 1859; by Wisetonian (17244), out of Acorn by Magician 2nd (10486)—Mr. W. Wiggins, 31 gs.

Seraph, white, calved September 23, 1860; by Londonderry (13169), out of Sunshine by Mameluke (13289)—Mr. J. K. Fowler, Aylesbury, 65 gs.

Harmony, red and white, calved November 2, 1861; by Cherry Duke 3rd (15763), out of Floret by Douglas (12714)—Mr. D. R. Davies, 90 gs.

Sorceress, roan, calved January 22, 1862; by Moccasin (18406), out of Syren by Amiens (14095)—Sir G. Philips, 60 gs.

Harebell, red and white, calved November 16, 1862; by Fourth Duke of Thorndale (17750), out of Floret by Douglas (12714)—Mr. W. J. Sheldon, 120 gs.

Songstress, roan, calved November 19, 1862; by Challenger (17521), out of Seraph by Londonderry (13169)—Mr. F. Sartoris, 110 gs.

Heartsease, red, calved November 4, 1863; by Chanter (19423), out of Floret by Douglas (12714)—Mr. W. Adcock, Farnish, 85 gs.

Edith, white, calved October 11, 1863; by Moccasin (18406), out of Eva by Amiens (14095)—Reserved by leave.

Honesty, roan, calved April 9, 1864; by Chanter (19423), out of Harmony by Cherry Duke 3rd (15763)—Mr. Tait, for the Queen, 81 gs.

Hollyhock, red and white, calved October 2, 1864; by Chanter (19424), out of Floret by Douglas (12714)—Lord Feversham, 68 gs.

Fancy, red and white, calved January 18, 1863; by Chanter (19423), out of Feathers by Combatant (15788)—Mr. Gerard Barton, Norfolk, 43 gs.

Maryland, white, calved October 13, 1864; by Bull's Run (19368), out of Alabama by Mameluke (13289)—Mr. F. Leney, Kent, 90 gs.

Sympathy, white, calved April 2, 1865; by Chanter (19423), out of Sweetheart 2nd by Earl of Dublin (10178)—Mr. J. Fawcett, 125 gs.

Frailty, roan, calved May 18, 1865; by Barleycorn the Younger (21209), out of Fancy by Chanter (19123)—Mr. G. Saville, Ingthorpe, 50 gs.

Amaranth, red and white, calved September 11, 1865; by Chanter (19423), out of Alice by Wisetonian (17244)—Mr. W. Baldwin, 48 gs.

Spangle, roan, calved November 6, 1865; by Chanter (19423), out of Seraph by Londonderry (13169)—Mr. F. Leney, 160 gs.

Diamond 5th, light roan, calved March 4, 1866; by Grand Monarch 2nd (18887), out of Diamond by The General (13856)—Mr. A. Dangar, for Australia, 40 gs.

Hopeful, red and white, calved April 1, 1866; by Chanter (19423), out of Harmony by Cherry Duke 3rd (15763)—Mr. R. Sneyd, Keele, 85 gs.

Gipsy, light roan, calved March 10, 1866; by Grand Monarch

2nd (18887), out of Carnation by Saracen (15237)—Mr. Price, M.P., Gloucestershire, 32 gs.

Diana, white, calved April 1, 1866; by Potentate (22537), out of Edith by Moccasin (18406)—Mr. J. Fawcett, Scaleby, 120 gs.

Science, roan, calved April 2, 1866; by Chanter (19423), out of Sweetheart 2nd by Earl of Dublin (10178)—Mr. D. M'Intosh, Essex, 90 gs.

Fidelity, red and white, calved May 2, 1866; by Chanter (19423), out of Frippery by Mameluke (13289)—Mr. A. Danger, 51 gs.

Aurora, roan, calved July 11, 1866; by Chanter (19423), out of Alice by Wisetonian (17244)—Col. Lindsay, 37 gs.

Dido, white, calved February 20, 1867; by Potentate (22537), out of Edith by Moccasin (18406)—Mr. Canning, 50 gs.

Heliotrope, roan, calved July 20, 1867; by Potentate (22537), out of Heartsease by Chanter (19423)—Mr. G. Saville, 65 gs.

Constancy, red roan, calved September 14, 1867; by Third Duke of Geneva (21592), out of Concord by Londonderry (13169)—Mr. J. Fawcett, 140 gs.

BULLS.

Coronet (23261), white, calved October 18, 1865; by Chanter (19423), out of Concord by Londonderry (13169)—Mr. J. B. White, 41 gs.

Patrician (24728), roan, calved November 10, 1865; by Chanter (19423), out of Princess by General Havelock (17952)—Mr. G. M. Tracy, 170 gs.

Monitor (24615), white, calved November 20, 1866; by Countryman (21500), out of Maryland by Bull's Run (19368)—passed.

Paragon (24722), rich roan, calved November 20, 1866; by Barleycorn the Younger (21209), out of Princess by General Havelock (17952)—Mr. Cottrell Corbett, 100 gs.

Sweet William, white, calved March 5, 1867; by Potentate (22537), out of Sweetheart 2nd by Earl of Dublin (10178)—Mr. J. H. Pearce, 46 gs.

Hardicanute, red roan, calved April 26, 1867; by Potentate (22537), out of Harmony by Cherry Duke 3rd (15763)—Mr. J. K. Fowler, 55 gs.

Spectre, roan, calved August 15, 1867; by Patrician (24728), out of Sorceress by Moccasin (18406)—Mr. C. S. Read, M.P.—48 gs.

Adamant, roan, calved July 30, 1867; by Potentate (22537), out of Alice, by Wisetonian (17244)—Mr. D. G. Round, 24 gs.

Hospitality, roan, calved August 20, 1867; by Potentate (22537), out of Harebell by 4th Duke of Thorndale (17750)—Lord Feversham, 50 gs.

Harold, roan, calved October 7, 1867; by Potentate (22537), out of Hollyhock by Chanter (19423)—Mr. M. Savidge, 34 gs.

Freebooter, roan, calved October 2, 1867; by Patrician (24728), out of Frailty by Barleycorn the Younger (21209)—Mr. Jordan, 26 gs.

Merrimac, white, calved October 28, 1867; by Patrician (24728), out of Maryland by Bull's Run (19368)—Mr. Walton, 22 gs.

Senator, white, calved October 28, 1867; by Patrician (24728), out of Sympathy by Chanter (19423)—Lord Anglesey, 40 gs.

Hilarity, roan, calved December 2, 1867; by Potentate (22537), out of Floret by Douglas (12714)—Rev. G. Warrener, 41 gs.

President, roan, calved January 4, 1868; by Third Duke of Geneva (21592), out of Princess by General Havelock (17952)—Sir G. Philips, 65 gs.

EXTRA BULLS.

Diogenes, roan, calved February 25, 1868; by Patrician (24728), out of Edith by Moccasin (18406)—Mr. Steel, 26 gs.

Damon, white, calved February 25, 1868; by Patrician (24728), out of Edith by Moccasin (18406)—Mr. Deuchfield, 18 gs.

Serenader, roan, calved March 13, 1868; by Patrician (24728), out of Songstress by Challenger (17521)—Mr. Fisher, 31 gs.

SUMMARY.		£	s.	d.
31 Cows averaged	£88 6s. 8d. =	2,738	8	0
17 Bulls	" £51 6s. 6d. =	872	11	0
Total.....		£3,810	19	0
Average of 48 heads		75	4	6
11 Sweethearts averaged		80	1	10
3 Charmers		94	17	0
12 Flœrets		73	17	0
5 Frills		46	8	2
4 Princesses		178	10	0
4 Alioes		36	15	0
4 Ediths		56	3	6
5 odd lots		48	6	0
14 Sylphs		83	5	0

SALE OF THE THORNINGTON HERD OF SHORTHORNS.

This herd of Shorthorns, whose foundation dates back nearly a century, was brought to the hammer, at Thornington, which is situated on the Bowmont Water, about six miles from the Cornhill Station. The cows and heifers, thirty-two in all, realized altogether £1,110 18s., or an average of £34 14s. 4d. per head. Seventeen bull made £563 19s., or an average of £33 8s. 6d. per head. Mr. Donkin acted as auctioneer.

COWS AND HEIFERS.

Peeress 2nd, red, calved March 3, 1855, by Young Duke of Oxford—Mr. Turnbull, Cresswell, 36 gs.
 Waterwitch 5th, red and white, calved February 4, 1856, by Young Duke of Oxford—Mr. Laycock, of Gosforth, 31 gs.
 Waterwitch 7th, red and white, calved March 13, 1857, by Young Duke of Oxford—Mr. Mathison, Moneylaws, 22 gs.
 Waterwitch 8th, roan, calved March 13, 1860, by Havelock—Mr. Laycock, 40 gs.
 Waterwitch 19th, roan, calved February 13, 1861, by Havelock—Mr. Laycock, 28 gs.
 Waterwitch 14th, white, calved May 28, 1862, by Havelock—Mr. Thomson Caverhead, 26 gs.
 Waterwitch 16th, roan, calved March 2, 1863, by Field Marshal—Mr. Laycock, 27 gs.
 Peeress 3rd, calved January 20, 1863, by Field Marshal—Mr. Grey, Dilston, 70 gs.
 Flora 3rd, red and white, calved Feb. 3, 1863, by Field Marshal—Mr. Ruddock, Berwick, 35 gs.
 Waterwitch 16th, calved March 2, 1863, by Field Marshal—Mr. Ruddock, 31 gs.
 Waterwitch 17th, roan, calved April 5, 1863, by Field Marshal—Mr. Bell, Linton, 30 gs.
 Peeress 4th, red and white, calved Feb. 28, 1864, by Field Marshal—Mr. Jacob Wilson, Woodhorn, 46 gs.
 Flora 4th, red and white, calved Feb. 18, 1864, by Field Marshal—Mr. Grey, Dilston, 51 gs.
 Waterwitch 18th, red and white, calved Feb. 22, 1864, by Field Marshal—Mr. Grey, 57 gs.
 Waterwitch 19th, roan, calved March 20, 1864, by Field Marshal—Mr. Grey, 30 gs.
 Waterwitch 20th, roan, calved March 2, 1864, by Field Marshal—Mr. Ruddock, 30 gs.
 Waterwitch 21st, roan, calved March 30, 1864, by Field Marshal—Mr. Grey, 41 gs.
 Waterwitch 22nd, roan, calved April 12, 1864, by Field Marshal—Mr. Turnbull, Tiptoe, 28 gs.
 Waterwitch 23rd, white, calved January 11, 1865, by Captain Marshall—Mr. Dinning, Adderstone, 31 gs.
 Peeress 5th, red, calved April 3, 1865, by Captain Marshall—Mr. Davidson, Longbank, Alnwick, 40 gs.
 Beauty 5th, white, calved May 8, 1865, by Captain Marshall—Mr. Howie, Howtle, 27 gs.
 Waterwitch 25th, red, calved January 28, 1866, by Captain Marshall—Mr. Grey, 41 gs.
 Waterwitch 26th, roan, calved Feb. 20, 1866, by Capt. Marshall—Mr. Johnstone, Adderstone, 24 gs.
 Waterwitch 27th, red, calved March 2, 1866, by Captain Marshall—Mr. J. C. Langlands, Old Bewick, 22 gs.

Peeress 6th, red, calved April 4, 1866, by Captain Marshall—Mr. W. B. Wilson, Blagdon, Newcastle, 38 gs.
 Duchess 3rd, red, calved 26, 1866, by Captain Marshall—Mr. W. B. Wilson, 38 gs.
 Waterwitch 29th, roan, calved April 4, 1866, by Captain Marshall—Mr. Borthwick, Mindrum, 27 gs.
 Waterwitch 30th, roan, calved April 21, 1866, by Captain Marshall—Not sold.
 Waterwitch 31st, roan, calved Feb. 3, 1866, by Adolphus—Mr. W. B. Wilson, 16 gs.
 Waterwitch 32nd, roan, calved Feb. 1867, by Adolphus—Mr. Turnbull, Cresswell, 7 gs.
 Waterwitch 33rd, roan, calved Feb. 14, 1867, by Adolphus—Mr. Langlands, 13 gs.
 Waterwitch 34th, red and white, calved March 10, 1867, by Knight of Hawkhill—Mr. Howie, 15 gs.
 Peeress 7th, red and white, calved April 12, 1867, by Knight of Hawkhill—Mr. Wilson, Woodhorn, 22 gs.

BULLS.

Knight of Hawkhill, red and white, calved June, 1865, bred by Mr. Thomas Crisp, Hawkhill, got by Faldonside—Mr. Dinning, 30 gs.
 Glacier, white, calved January 6, 1866, by Captain Marshall—Mr. Ruddock, 26 gs.
 Comrade, roan, calved March 24, 1866, by Captain Marshall—Mr. Ruddock, 20 gs.
 Antonia, red, calved March 26, 1866, by Captain Marshall—Mr. Thompson, Paston, 27 gs.
 Orlando, white, calved May 4, 1866, by Captain Marshall—Mr. Grey, 34 gs.
 Jacques, roan, calved February 5, 1867, by Lionel—Mr. Turnbull, Budle, 25 gs.
 Falstaff, roan, calved February 7, 1867, by Lionel—Mr. Laycock, Mindrum Mill, 31 gs.
 Sampson, red and white, calved January 30, 1867, by Adolphus—Mr. Ross, Newton Lees, 31 gs.
 Don Juan, red and white, calved Feb. 28, 1867, by Knight of Hawkhill—Mr. Smith, Melkington, 19 gs.
 Duke, roan, calved March 17, 1867, by Knight of Hawkhill—Mr. Langlands, 36 gs.
 Foundling, red and white, calved April 19, 1867, by Knight of Hawkhill—Mr. Dove, Eccles, 31 gs.
 North Star, red, calved March 20, 1867, by Knight of Hawkhill—Lord Durham, 32 gs.
 Dromio, red, calved April 27, 1867, by Knight of Hawkhill—Mr. Wilson, Blagdon, 49 gs.
 Marquis, red and white, calved March 1, 1867, by Knight of Hawkhill—Mr. Grey, Dilston, 31 gs.
 Count, red and white, calved March 3, 1867, by Knight of Hawkhill—Mr. Howie, Detchant, 38 gs.
 Bassanio, red, calved April 23, 1867, by Knight of Hawkhill—Mr. Laing, Boston, 42 gs.
 Romeo, red and white, calved March 25, 1867, by Knight of Hawkhill—Mr. Howie, Howtle, 35 gs.

HEIFER CALVES.

Peeress 8th, red and white, calved January 20, 1868, by Knight of Hawkhill—Mr. Wilson, Woodhorn, 10 gs.
 Waterwitch 35th, roan, calved February 20, 1868, by Knight of Hawkhill—Mr. Dinning, 3 gs.
 Peeress 9th, red, calved March 8, 1868, by Knight of Hawkhill—Mr. Wilson, Woodhorn, 8½ gs.

BULL CALVES.

Moslem, red and white, calved February 2, 1868, by Knight of Hawkhill—Mr. Turnbull, Tiptoe, 5 gs.
 Alp, red, calved February 12, 1868, by Knight of Hawkhill—Mr. Howie, Howtle, 9 gs.
 The Page, red and white, calved February 12, 1868, by Knight of Hawkhill—Mr. Borthwick, Kilham, 4 gs.
 Tasso, red and white, calved February 26, 1868, by Knight of Hawkhill—Mr. Elliott, Weltwoodhill, 5 gs.
 Harold, roan, calved February 27, 1868, by Knight of Hawkhill—Mr. Reid, Hethpool, 6 gs.
 Bertram, red and white, calved March 5, 1868, by Knight of Hawkhill—Mr. Black, Grindon, 4½ gs.
 Ratcliff, red, calved March 10, 1868, by Knight of Hawkhill—Mr. Short, Humbleton, 4½ gs.

SALE OF SHORTHORNS AT SITTITON

The Messrs. Cruickshank, Sittiton, have just offered a large number of young bulls and heifers. The Messrs. Cruickshank's farms, four in number—Sittiton, Clyne, Uday, and Longside—with a total acreage of between 800 and 900, have the largest herd of Shorthorns in Europe. The day was very fine, and there was a large gathering of gentlemen. The average for the bulls was over 44 guineas, and for the heifers £30 3s. Mr. Mitchell discharged the duties of auctioneer.

BULLS.

Golden Hero, red, calved 23rd October, 1866, by Prince Imperial—Mr. Stewart, Aberdeen, 38 gs.
 Coscomb, red and white, calved 18th January, 1867, by Prince Imperial—Alex. Gordon, of Newton, 36 gs.
 Allandale, red and white, calved 8th December, 1866, by Champion of England—Mr. Syme, Edinburgh, for a Prussian House, 60 gs.
 Prince of the Realm, red, calved 30th January, 1867, by Champion of England—Mr. John Farquharson, New Market, Aberdeen, 47 gs.
 Coronet, red, calved 9th January, 1867, by Prince Imperial—Lord Dalhousie, Brechin Castle, 31 gs.
 Majestic, red, calved February 2, 1867, by Prince Imperial—Lord Dunmore, Dunmore, Stirlingshire, 58 gs.
 Grand Vizier, roan, calved February 26, 1867, by Allan—Sir Wilfred Lawson, Bretton, Cumberland, 68 gs.
 Sancho Panza, red roan, calved February 28, 1867, by Champion of England—Mr. W. Grant, Wester Elchies, 44 gs.
 Golden Rod, red, calved March 3, 1867, by Prince Imperial—Mr. Robert Pittendrigh, Newcastle Tyrie, 30 gs.
 Golden Eagle, red roan, calved March 6, 1867, by Champion of England—Mrs. Turnbull, Brpton, Bourtie, 47 gs.
 Bon-Accord, roan, calved March 8, 1867, by Royal Prince—Mr. T. F. Jamieson, Elton, 43 gs.
 Ocean Monarch, roan, calved February 28, 1867, by Champion of England—Mr. Syme, Edinburgh, 40 gs.
 Multum-in-Parvo, red roan, calved March 23, 1867, by Lord Privy Seal—Mr. Milne, Mill of Allathan, Elton, 72 gs.
 Young Butterfly, roan, calved April 3, 1867, by Caractacus—Mr. John Deans, Mains of Balquhaine, 70 gs.
 Baron Shafto, red and white, calved April 9, 1867, by Caractacus—Mr. Harvey, Pitgerie, Forgue, 64 gs.
 Forth 3rd, roan, calved April 6, 1867, by Forth—Mr. Buxton, South Artrochie, Elton, 79 gs.
 Baron Sackville, roan, calved April 6, 1867, by Caractacus—Withdrawn, being lame.
 Nebraska, roan, calved April 15, 1867, by Allan—Mr. W. S. Marr, Uppermill, 42 gs.
 Jeweller, red and white, calved April 27, 1867, by Champion of England—Mr. Murray, Old Crombie, 47 gs.
 Lord Warden, white, calved April 5, 1867, by Royal Prince—Mr. Hay, Little Ythsie, 37 gs.
 Reginald, white, calved April 7, 1867, by Royal Prince—Mr. Smith, Pitscath, Foveran, 29 gs.
 Safeguard, red, calved April 9, 1867, by Royal Prince—Mr. W. McDonald, Wester Moy, Forres, 46 gs.
 Bolingbroke, red, calved April 11, 1867, by Prince Imperial—Mr. J. Morrison, Newseat, Chivas, Tarvis, 30 gs.
 Will o' the Wisp, white, calved March 17, 1867, by Royal Prince—Mr. J. Fowler, Anchineleith, Daviot, 37 gs.
 Professor Blackie, red, calved April 1, 1867, by Caractacus—Mr. Thomson, Greenmyre, Methic, 50 gs.
 Don Quixote, red and white, calved April 22, 1867, by Champion of England—Mr. Strachan, Saphock, 54 gs.
 Lord Cranworth, red, calved April 27, 1867, by Royal Prince—Mr. W. Cruickshank, Cairnglass, Lomnay, 40 gs.
 Apollo, roan, calved April 17, 1867, by Allan—Mr. Syme, Edinburgh, 37 gs.
 Belvidere, roan, calved April 26, 1867, by Forth—Withdrawn.
 Forth 4th, red and white, calved May 2, 1867, by Forth—Mr. Kerr, Rossie, near Perth, 24 gs.
 Landmark, red, calved May 7, 1867, by Allan—Mr. Ross of Arnage, 40 gs.
 Forth 5th, red and white, calved May 16, 1867, by Forth—Mr. Catto, Middleton of Battray, Crimond, 37 gs.
 Golden Rule, roan, calved May 20, 1867, by Champion of England—Mr. Reid, Greystone, Alford, 56 gs.

Forth 6th, roan, calved May 17, 1867, by Forth—Mr. Syme, Edinburgh, 40 gs.
 Lord Lovel, red, calved May 27, 1867, by Allan—Mr. Wallace, Chapel of Seggatt, Auchterless, 31 gs.
 Senator, red, calved June 9, 1867, by Allan—Mr. Grant, Wester Elchies, Morayshire, 26 gs.
 Forth 7th, red, calved June 9, 1867, by Forth—Mr. Petrie, Kirkhill, Elgin, 41 gs.
 Magna Charter, roan, calved June 10, 1867, by Caractacus—Mr. John Burgess, Caughinhead, Botriphnie, 30 gs.
 North Britain, red, calved July 2, 1867, by Lord Byron—Withdrawn.
 Forth 8th, red, calved June 4, 1867, by Forth—Mr. H. Davidson, Oldhall, Caithness, 33 gs.

HEIFERS.

Fruitful, roan, calved, Jan. 22, 1866, by Prince Imperial—Mr. Wm. Grey, Golspie, Sutherlandshire, 23 gs.
 Duchess of Grafton, red and white, calved March 24, 1866, by Royal Oak—Mr. J. Findlater, Crannach, 24 gs.
 Constance, red, calved April 4, 1866, by Prince Imperial—Mr. Chivas, Middleton of Rora, 32 gs.
 Grandiflora 7th, red, calved May 2, 1866, by Prince Imperial—Mr. Anderson, Dundee, Marnech, 23 gs.
 Brenda, red, calved May 17, 1866, by Champion of England (in-calf)—Mr. Polson, Mains of Arnage, 31 gs.
 Jenny Lind, white, calved May 12, 1866, by Royal Oak—Mr. Simpson, Hillend, Fordyce, Banffshire, 22 gs.
 Mysie 30th, roan, calved June 14, 1866, by Baronet—Mr. Chivas, Middleton, Rora, 30 gs.
 Passionflower, red and white, calved June 15, 1866, by Royal Oak—Sir Wilfred Lawson, Bretton, 37 gs.
 Springflower, red, calved January 29, 1867, by Prince Imperial—Sir Wilfred Lawson, 33 gs.
 Kilmeny 8th, roan, calved March 10, 1867, by Lord Privy Seal—Mr. J. Davidson, Cila, Old Deer, 19 gs.
 Seraphina 2nd, red, calved March 23, 1867, by Royal Prince—Mr. Mitchell, Meikle Haddo, Foveran, 22 gs.
 Royal Princess, red, calved April 1, 1867, by Champion of England—Lord Dunmore, 33 gs.
 Verona, roan, calved June 19, 1867, by Royal Prince—Lord Dunmore, 40 gs.

ARDFERT SALE OF SHORT-HORNS.

This annual sale came off on Tuesday, March 24, conducted as usual by Ganly. The attendance was larger than for some years. The following were the chief prices:

Grove of Sorrento, roan, by Castlegrove, dam Plain of Sorrento by Nobleman—Mr. John Furlong, 33½ gs.
 Carissimo, roan, by Castlegrove, dam Carina by Lamp of Lothian—Mr. W. Sullivan, 18 gs.
 Sovereign of Debdale, white, by Royal Sovereign, dam Kathleen of Debdale by Lamp of Lothian (a very good one)—Mr. B. Barrett, 23 gs.
 Sir Robert, white, by Royal Sovereign, dam Lady Mary by Nobleman (also a very good one)—Mr. J. Hewson, 16½ gs.
 Lamp of Florence, rich roan, by Lamp of Lothian, dam Florence by Desmond—Earl of Dartry, 40 gs.
 Son Royal, roan, by Royal Sovereign, dam Minna by Lord of the Dales—Earl of Dunraven, 32 gs.
 Valley Royal, roan, by Royal Sovereign, dam Vale of Avoca by Lamp of Lothian—Mr. Michael Sheehan, 27 gs.
 Lord of the Lake, roan, by Royal Sovereign, dam Como by Nobleman—Mr. P. Barton, 18 gs.
 Crowned Head, white, by Royal Sovereign, dam Florence Diadem by Lamp of Lothian—Mr. D. Watson, 15 gs.
 Sovereign Gwynne, red, by Royal Sovereign, dam Florence Gwynne by Gwynne of Lothian—Col. Vandeleur, 45½ gs.
 Crown Royal, red and white, by Royal Sovereign, dam Diadem by Admiral—Mr. P. Hartigan, 71 gs.
 Last of the Lothians, white, by Lamp of Lothian, dam Elegance of Windsor by Duke of Windsor—Mr. John Lawlor, 17 gs.
 Royal Tudor, red and white, by Royal Sovereign, dam Queen Bess by Lamp of Lothian—Mr. T. Sandes, 46 gs.
 Manor Royal, roan, by Royal Sovereign, dam Maid of the Manor by Castlegrove—Mr. W. Lunham, 27 gs.
 Grove of Debdale, white, by Castlegrove, dam Kathleen of Debdale by Nobleman—Mr. Murphy, 11 gs.

SALE OF THE KINELLAR SHORTHORNS.

The annual sale of shorthorn bull and heifer calves, the property of Mr. Sylvester Campbell, Kinellar, took place on Thursday, March 12, when the number of animals for sale was twenty bulls and five heifers. The amount realized altogether was 749 guineas—647 guineas for the bulls, and 102 guineas for the heifers, or an average of nearly £34 for the bulls, and for the heifers £21 10s. The following is a list of prices:

BULLS.	Gs.
Gladstone, calved 1866, by Royal Oak; Mr. Thomson, Burnside, Pochabers ...	40
Red Rover, calved 1867, by Prince of Worcester; Mr. Chrystall, Hill of Ardo, Belhelvie ...	30
Juniper, calved 1867, by Diphthong III.; Mr. Thompson, of Pitmedden ...	30
Pacha, calved, 1867, by Prince of Worcester; Mr. H. L. L. Morrison, Guise, Tough ...	51
Baron Nonpareil, calved 1867, by Prince of Worcester; Mr. Sangster, Blackchambers, Kinellar ...	42
Baron Oxford, calved 1867, by Prince of Worcester; Mr. Gray, Fingask, Daviot ...	48
Victo, calved, 1867, by Diphthong III.; Sir Charles Forbes, Bart., of Newe ...	40
Second Prince, calved 1867, by Prince of Worcester; Mr. Reid, Shanguhar, Gartly ...	40
Privy Seal, calved 1867, by Prince of Worcester; Mr. Gordon, Finnylost, Strathdon ...	30
Admiral, calved 1867, by Diphthong III.; Mr. Shaw, Tillyebing ...	37
Earl of Scarbro', calved 1867, by Diphthong; Mr. Wilson, Dalfing, Chapel of Garioch ...	29
Lord Byron, calved 1867, by Prince of Worcester; Mr. Fraser, Darkland, Lhanbryde ...	26
Rufus, calved 1867, by Diphthong III.; Mr. Ramsay, Barnton, Echt ...	24
Duke of Windsor, calved 1867, by Diphthong III.; Mr. Smith, Thornton, Bourtie ...	28
Mosstrooper, calved 1867, by Prince of Worcester; Mr. Argo, Gateside, Bellhelvie ...	23
Royal Knight, calved 1867, by Diphthong III.; Mr. Fraser, Darkland, Lhanbryde ...	36
Royal Blossom, calved 1867, by Diphthong III.; Mr. Walker, Angustown, Peterculter ...	26
Red Robin, calved 1867, by Diphthong III.; Mr. Gordon, Monally, Fergue ...	18
Walpole, calved 1867, by Diphthong III.; Mr. Williamson, Bendaugh ...	15
Lord Derby, calved 1867, by Prince of Worcester; Mr. Joes Cruichie, Drumblade ...	34
HEIFERS.	
Alma, calved 1867, by Prince of Worcester; Mr. Walker, Angustown, Peterculter ...	22
Crocus, calved 1867, by Diphthong III.; Mr. Warrack, Newmill, Fintray ...	24
Eliza V., calved 1867, by Diphthong III.; Dr. Reid, Ellon ...	23
Rarity I., calved 1867, by Diphthong; Mr. Valentine, Affleck, Skene ...	18
Jenny Lind, calved 1867, by Superbus; Mr. Donald, Newton, Kincardine O'Neill ...	16

SHORTHORN SALE AND SHOW IN BINGLEY HALL.

This sale was attended by a very large number of farmers and breeders, many from long distances. The cows and heifers sent, as a rule, were not equal to the bulls. Many of them were in very low condition, the fact being, as Mr. Lythall stated at the commencement, that the reason many were parted with was that the owners were unable to keep them any longer. The sale opened with six or eight old cows from Lady Pigot's and Mr. Wiggan's herds, which made from 22 to 35 gs. Lot 9 was a well-bred five-years-old cow of good quality, from Sir R. Peel's, and was secured by Mr. Simmons for the Rev. C. W. Holbech, at 42 guineas, which was the highest figure reached for any female; and nothing else worthy of note appeared until

lot 17, "Coronet," a pure Booth heifer, two year old, and already the dam of a calf. This was a red heifer of good form and quality, and went cheap to Captain Turberville at 38 guineas, the same gentleman taking "Empress"—a very clever red yearling heifer of Mr. Pawlett's—at the same figure. The bulls were mainly of a very good stamp, and some persons were of opinion that it would be an advantage to confine the sales in future years to young bulls only. There was little disposition to purchase those above eighteen months old, and the first two or three went at very little, if anything, over their value to the butcher. Of the sixteen entered for the prize there was little difficulty in selecting the two best, but between the two many good judges differed. We think that having only to look which was the best animal, and without any pedigree to refer to, that the decision of Messrs. Doig and Harris in favour of Lady Pigot's Rosolio, in preference to Captain Oliver's calf, Lord of the Lake, was doubtless correct. For the third prize there were several that ran very close, and we think few complaints would have been made had one of Mr. Curtler's commended bulls, or one or two others of Mr. Garne's, instead of the selected one, stood in the place of Sir Robert Napier. Altogether thirty-one bulls out of thirty-seven sent, were disposed of for £1,074 3s., or an average of very nearly £35 each; and of these Messrs. Garne's 6 averaged £49 7s.; Mr. Curtler's 3, £47 5s.; Mr. Woodward's 6, £34 13s. Mr. Woodward's six bulls were well descended, with good hair upon them and level tops; and were sent in fair store-condition. Nos. 12 and 35 of Mr. Curtler's were straight, promising, young bulls; and his third, Count Foggathorpe, a good scion of that well-known tribe, having perhaps the best hair of anything in the hall. The highest figure given was £88 4s. for Captain Oliver's calf before alluded to, which went into Wales to Captain Turberville. A straight, good-looking five-months-old calf of Mr. Sheldon's was secured by the Rev. R. B. Kennard at 25 gs. The judges were Mr. Richard Doig, Lillingstone Hall, Buckingham, and Mr. Thomas Harris, Stoner-lane, Bromsgrove.—*Midland Counties Herald.*

SALE OF BULLS AT GLOUCESTER FAIR.—The twenty-fourth annual sale of pure-bred Shorthorn bulls, the property of Mr. W. Woodward, was held by Messrs. West and Moore, in Gloucester fair, on Monday last, when the following prices were realised:—Woodman, calved in Jan., 1866, by Marmaduke 2nd (Mr. Ratcliffe), 33 gs.; Gregory, August, 1866, by Marmaduke 2nd (Mr. Baker), 28½ guineas; Lord of the Manor, November, 1866, by Merryman (Mr. Garlick), £30; Naturalist, November, 1866, by Imperialist (Mr. Hone), 24 gs.; Nickey, November, 1866, by Duke of Flanders (Mr. Allen), 23 gs.; Dukedom, December, 1866, by Chicago (Mr. Martin), 29½ gs.; Matthias, December, 1866, by Imperialist (Mr. Morrall), 28 gs.; Lord Wetherby, February, 1867, by Imperialist (Mr. Ferrary), 22 gs.; High Admirable, August, 1867, by Marmaduke 2nd (Mr. Bellamy), 18½ gs.; Battalion, November, 1866, by Marmaduke 2nd (Mr. Warner), 30½ gs. The same auctioneers sold, at the same time and place, two pure-bred Hereford bulls, the property of Mr. Morris, of Stanley Pontlarge, viz.: Young Boingbrooke, calved in November, 1866, by Memento (Mr. Walker), 21 guineas; and Discount, January, 1867, by Memento (Mr. Meed), 15 gs.

ARRIVAL OF CATTLE FROM THE RIVER PLATE.—The first lot of cattle from the River Plate has just been brought from Monte Video to the Victoria Docks, Blackwall, by the City of Limerick (s.s.), and, owing to misunderstanding on the part of a subordinate officer, one of the sample was actually landed in contravention of the Orders in Council, bought by a butcher, and has since been eaten. To this irregularity the attention of the solicitor of the Customs was called by the proper officer, who, inquiring that cause should be shown why a prosecution should not be instituted, has, it is to be hoped, been satisfied with the representations addressed to him on behalf of an old sailor, ignorant of the restrictions and prohibitions now in force. For his purchase the butcher paid the sum of £14, and the bullock having only cost £1 there was a handsome margin for profit by the transaction.

AGRICULTURAL SHOW AT OTLEY.

The Wharfedale Agricultural Society held its seventieth exhibition at Otley. The day was bright and genial, and attracted large crowds to the ground where the display took place. Success also of a satisfactory character crowned the efforts of the secretary and committee. In no previous year have the entries been so large. In the Shorthorn class comparatively few animals made their appearance, and this scanty representation is all the more remarkable when it is remembered how many breeders the district can boast of. There was a good display of all other kinds of cattle. Mr. Botcherby, of Darlington, carried off the cup for the best bull and the silver medal for the best cow in the farmer's class. The horses excited universal admiration, all classes being well filled with animals of a decidedly superior description. The Earl of Harewood took the first prize for blood stallions; Mr. Thomas Forshaw, of Otley, obtained a similar honour for roadster stallions, and his relative, Mr. Jas. Forshaw, stood first in draught stallions. Few larger or better displays of hacks have been seen; and the first prize was carried off by a superb mare belonging to Mr. J. W. Scriven, Throstle Nest, Otley. Sheep, pigs, and poultry were all good. The following gentlemen officiated as judges:

Cattle and Horses.—Mr. Wm. Davis, Gargrave; Mr. Wm. Clark, Bilton, near Wetherby; Mr. Emanuel Hird, Manchester.

Sheep and Pigs.—Mr. James Knowles, Wetherby; and Mr. Stephen Barrett, Harewood.

SHORTHORNED CATTLE.

GENTLEMEN'S PREMIUMS.

BULLS.—Two years old and upwards, W. Fison and Co., Greenholme, Barley-in-Wharfedale. Bull-calf, R. J. Hudson, Moorville, Barley-in-Wharfedale; second, W. Fison and Co.

Cows.—One-year-old, J. Garnett, Otley. Two-years-old, L. J. Crossley, Upper Willow Hall, Halifax. Three-years-old, W. M. Spence, Deanfield House, Weston; second, W. Fison and Co.

FARMERS' PREMIUMS.

BULLS.—One-year-old, J. Renton, Farnley; second, S. Witeron, Braham Hall, Wetherby. Two-years-old or upwards, J. W. Botcherby, Darlington (and cup); second, J. T. Robinson, Leckby Palace, Thirsk. Bull-calf, under 12 months, C. Wright, Oglethorpe Hall, near Tadcaster; second, M. Lamb, Caley Hall Farm, Otley.

Cows.—One-year-old, J. W. Botcherby; second, J. T. Robinson. Three-years-old or aged, J. T. Robinson; second, J. Cooper, North Deighton, near Wetherby. Heifer-calf, under 12 months, Crawshaw and Blakeley, Headfield Farm, Dewsbury; second, C. Stansfeld, Rawden. Cow of any age, for dairy purposes, W. M. Spence, Deanfield House, Weston; second, S. Blakey, Otley.

BOARS AND SOWS.

Large bred boar: J. Dyson, Leeds; 2, Wm. Popplewell, Guiseley. Small-bred boar: J. Dyson; 2, R. E. Duckering and Sons, Kirton Lindsey. Middle-bred boar: Wm. Hatton, Addingham; 2, R. E. Duckering and Sons. Large-bred sow: J. Dyson; 2, R. E. Duckering and Sons. Small-bred sow: Wm. Hatton; 2, J. Dyson. Middle-bred sow: R. E. Duckering and Sons; 2, J. Dyson. Large-bred sow: E. Harrison, Woodhouse, Leeds; 2, J. Wright, Keighley. Small-bred boar: J. and W. Sagar, Saltaire; 2, R. and E. Duckering and Sons. Middle-bred boar: G. Roberts, Skipton; 2, S. Blakey, Otley. Large-bred sow: S. Appleby, Armley; 2, R. E. Duckering and Sons. Small-bred sow: J. and W. Sagar; 2, H. Keyworth, Woodhouse, Leeds. Middle-bred sow: S. Blakey; 2, J. and W. Sagar.

HORSES.

Blood stallion, Earl of Harewood, Harewood House. Roadster stallion, T. Forshaw, Otley. Draught stallion, J. Forshaw, Barley-in-Wharfedale. Gelding or filly, foaled in or

before 1864, for roadster, Womaak and Thorpe, Bradford; 2, A. Renton, Leathley. Gelding or filly, foaled in 1865, for roadster, J. Cliff, Wortley; 2, J. Clark, Beeston. Gelding, foaled in 1865, for draught, W. and C. Kendall, Ripon; 2, J. Jackson, Fewstone. Filly, foaled in 1865, for draught, T. Greenwood, Calverley Bridge. Gelding or filly, foaled in 1866, for hunter, W. Dawson and Sons, Otley; 2, W. Marshall, Bradford. Gelding or filly, foaled in 1866, for roadster, W. Wardman, Kirkby-overblow; 2, Wm. Womersley, Rawden. Gelding or filly, foaled in 1866, for coaching, J. T. Robinson, Leckby Palace, near Thirsk. Gelding, foaled in 1866, for draught, J. Dury, Ripley; 2, T. Greenwood, Calverley Bridge. Filly, foaled in 1866, for draught, J. Cliff, Wortley. Colt or filly, foaled in 1867, for draught, W. Eddison, Adel; 2, J. Watkinson, Clifton, near Otley. Colt or filly, foaled in 1867, for roadster, P. Long, Spofforth; 2, F. Long. Roadster brood mare, J. Arnold, Bradford; 2, G. Louis, Bradford. Draught Brood Mare, W. Eddison, Adel Mill, Leeds; 2, S. W. Duncan, Rawden. cart-horse or mare, any age, and 2, Crawshaw and Blakeley, Dewsbury. Pony of any age, not exceeding 13 hands, W. Green, Smithfield Iron Works, Leeds; 2, W. Parler, Knareborough. Pony of any age, not exceeding 14 hands, H. Maxwell, Prospect House, Thirsk; 2, Joseph Conyers, Castle-grove, Far Headingley. Hack, any age, under 15 hands, J. W. Scriven, Throstle Nest, Otley; 2, W. Green.

SHEEP.

Leicester, Lincoln, or any other long-wooled sheep, T. H. Hutchinson, Manor House, Catterick; 2, J. Simpson, Spofforth Park, near Wetherby. Tup hog, T. H. Hutchinson; 2, J. Simpson. Pen of three ewes and lambs, T. H. Hutchinson; 2, John Dury, The Moss, Ripley. Lonk Ram, any age, J. B. Sidgwick, Ryddlesden Hall, Keighley; 2, T. King, Park-lane, Keighley.

FINANCIAL AND AGRICULTURAL BOARDS.—The Central Chamber of Agriculture has determined to support the bill for the establishment of county boards. The *Mark Lane Express* rebukes the managers of the Central Chamber for their tardiness in this matter. Some of them wanted to shelve the question altogether, alleging that the management of county finances could not be better placed than in the hands of the county justices, who are the owners of the lands of the county; while mere ratepayers, whom it is proposed to associate with them, are very different persons, and have no such permanency of interest as to justify their participating in the management. The *Mark Lane Express* shows that the argument is fallacious, and not entitled to any respect in itself. Justices, and especially those who are most active in voting away money, are very often younger brothers of great landowners and other persons of small estate. Indeed it is not worth while to examine or refute such arguments as these which have been cited against the yeoman taking part in the management of county finance. The day of argument is passed. It is a matter of settled conviction that they ought to do it, for taxation without representation is tyranny in the presence of the British constitution. We fully believe that the participation of the yeomanry in the levying and disposing of taxation would greatly conduce to economy. We should not have that abject "deference to Government" which we see in the squires whenever a new notion is sent down from London to be adopted in the provinces. We shall return to this matter. Meanwhile we see that the *Mark Lane Express* notices with approbation the attempt which Mr. T. D. Acland is about to make in Parliament for the establishment of "an authority specially charged with the duty of considering questions affecting agriculture and the food of the people." The hon. member for North Devon will move for a committee to examine and report on the subject. The agricultural journal from which we have quoted looks on Mr. Acland's motion as of great importance to the farming interest. Manufacturers have their Board of Trade, why should not farmers have their Board of Agriculture?—*The Western Times*.

MR. CAIRD'S CONCLUSIONS.

SIR,—I think all will admit that any statement put forward by Mr. Caird is entitled to serious attention; but many people are inclined (too much so, I think) to set down all he says as undeniable truth. In the paper read on the 17th inst., before the Statistical Society, there are one or two conclusions adopted by Mr. Caird, which I think are too serious to pass by, especially as they are easily shown to be erroneous. Mr. Caird has fallen into the same error as have most writers this season who are not well acquainted with the corn trade—viz., "We shall have enough food to last us until another harvest, because the importations hitherto have been enormous." I will apply my further remarks to this question in detail, first of all assuming as a well-ascertained fact that our requirements for the present year are *not less* than ten million quarters wheat and flour. Up to this time we have received more than half this quantity, and this was brought about mainly by the reason of a rapid advance in price immediately after harvest, inducing our large operators to send out extensive orders for grain to be shipped before the closing of the Black Sea and other ports. Consequently, the drain upon those countries has been unusually heavy. And here I may ask, What has become of all this weight of food? The answer is plain. There is no accumulation of stocks, and all, except what was taken from us by the French and other shortly-supplied continental countries, *has gone into consumption*? 800,000 qrs. required monthly, September to September; 940,000 qrs. received monthly, September to February; and none left! In this state of things, price is of secondary importance. Mr. Caird says we require 660,000 qrs. monthly for the *next* six months, "or one-third less than the rate at which during the last six months the high prices ruling have brought us foreign corn." And he goes on: "In the corresponding six months of last year our foreign imports exceeded 700,000 qrs. monthly, when the price of the preceding six months was 10s. per qr. less than at present." This is no argument, but only an assertion, in support of which he says not one word. It would be a source of comfort to many people if Mr. Caird would tell us *where* to get the food required in exchange for money. The question is not one of price, but *where is the stuff*?

Now, if we turn to the state of the trade at home, there is not a symptom to encourage the idea of plenty, but exactly the reverse. It is pretty generally admitted that up to the end of January considerably over half of our deficient crop (the worst but one during the last twenty years—see Mr. Caird) was thrashed out. And here occurs the same question again: What has become of it? Gone, clean gone, into consumption. Since January farmers have gone on thrashing and selling; they have all along been satisfied with the price and timid as to the future course of the trade. Their stackyards are thinner than ever before known, and they have none in granary; not a sample of stale wheat is to be seen this season; all has been sold as soon as thrashed. Then comes the question: Do merchants hold stock? The reply is: No. Prices have been too high to speculate upon. And now it is too late to get into stock; for in all the east-coast markets, wheat, especially fine quality of both red and white, is taken readily by local millers at nearly the same price it is worth in the northern markets. Next, I would point to the fact that all the warehouses in the larger ports have not had so little wheat in them for many years past—perhaps not once since free trade in corn came into operation. The diminished quantity returned weekly, as compared with the last few years, shows to what a pass things have come with regard to home supplies. We all know, whereabouts at least, that these lessened returns

are not because farmers do not thrash freely, but in consequence of their not having the stacks to run to. The only conclusion I can come to is this—Do not let us too long nourish the idea of plenty, but let us look the plain facts boldly in the face, and make up our minds that a pinch must come sooner or later. Food sufficient may be found, but is it certain that it will? I am, Sir, yours respectfully,
East Coast.

MATTER OF FACT.

CLOVERSEED ADULTERATION.

SIR,—I was exceedingly pleased to read an abstract of a paper, read by Mr. Hope, of Fenton Barns, before the Haddington Farmers' Club, on the subject of adulterated seed. I quite agree with that gentleman, that such impositions should be fully exposed; for I am well aware that it is a common practice with many dealers to mix a large proportion of seed, worthless as regards its growing properties (but artificially improved in appearance), with good seed; thus deteriorating its value considerably, although the sample looks equally fine, and in many instances has a finer colour than the unadulterated seed previously possessed. The most novel and certainly the basest practice, is that of colouring trefoil purple, and then mixing it with red clover, reducing its value 10 to 20 per cent., while it improves its appearance to the inexperienced fully 5 per cent. Thus a dealer in seeds wishing to do an honest business cannot possibly compete with those who sell "doctored" seed, but must submit to a limited trade for some years, till it has been proved that what he sells is really good growing seed; while the person who undersells him with a spurious article does a prosperous business, and is often encouraged by those who actually know the seed he offers to be adulterated. I therefore rests with the farmers to set their faces against such imposition, which is easily done by taking samples from the merchant with whom he deals, to test their growth. This should be done by counting the number of seeds sown; and if it be good seed 80 to 90 per cent. will germinate, and sometimes even more than that. A very simple method of experimentalizing may be adopted by placing the seeds on a piece of damped flannel, carried in a tin box in the trousers pocket, the warmth of which would induce vegetation in 24 to 48 hours. Mr. Hope says the adulteration of red clover is chiefly accomplished by its being brushed up, and improved with oil and black-lead. This is not injurious to the seed (unless killed), in fact, it is generally admitted that seed simply milled, with a few drops of oil, has its germination properties improved, and it also germinates more rapidly.

It may not be generally known that a few drops of oil and a small quantity of pulverized sulphur, added to turnip-seed, and shaken in a bag a few minutes before sown, will prevent an attack of "turnip-fly;" this I have tried repeatedly, by sowing some thus dressed by the side of some not dressed, and have succeeded in growing a good crop from the former, while the latter has been attacked by the fly. It also acts as a slight stimulant in the shape of manure.

I will now suggest a hint to farmers growing seeds for sale. It is a very common practice with them to take little or no trouble in producing clean samples free from weeds, especially docks in red and white clovers.

The expense would be trifling in abstracting this objectionable weed from their clover layers. I think agriculturists should be as careful in the samples they sell, as they are in selecting the ones they buy, for clean seed will always sell readily, while foul samples are neglected. Thus, by producing cleaner seed, and refusing to buy "doctored" samples at low prices, the results in future would be more satisfactory.

Ipswich.

Wm. GROVE.

THE SMITHFIELD CLUB SHOW OF 1867.

JUDGES' OPINIONS.

The following are selected from the Club's own Report as just issued:

"I consider that the DEVONS in the three first classes, though not heavy weights, were exceedingly good in quality, and with small bone. Classes 4 and 5 were very good, and the third prize cow, Mr. William Taylor's Rose, aged 10 years 6 months, a very remarkable animal, considering her age and her seven calves. Her quality was prime."

In HEREFORDS "class 6 is not so good as I should like to have seen it. Class 7 was very fair; in my opinion, however, Mr. Beach's should not have had the first prize, but my colleagues were of a different way of thinking. Class 8 was very good; I never saw eleven better beasts together; but, as it seemed to me, the highly-commended steer (Mr. Lewis Lloyd's) ought to have had the first prize, and Mr. Philip Turner's, which was also highly commended, the second; but two to one beat me again. Class 9, though a small class, was very good, and the cup winner was an extraordinarily good animal in all her points, except her humps. The second was a very nice level heifer, but rather short."

"The SHORTHORNS, considering the anxieties which two years of cattle-plague have entailed on breeders and feeders, were a very good average lot, and well prepared. There was scarcely an inferior one among them, but still there was an absence of any very distinguished individual specimen; the judges felt, on going through the classes, that there was nothing they could put forward with confidence for the cups, and so the event proved. On the whole, I think the cow class was the best. There were a number of cows which had done good service, and came out well at last—the right sort to encourage."

The SUSSEX were "good, well-fed beasts, and very much improved as a breed during the last five years. Messrs. Heasman's steer, which won in the above class, was an excellent one, but he had broken down so badly behind that he crept with some difficulty from his stall into the avenue to meet the judges."

"Taking the LEICESTER classes of this year as a whole, they were not good. The heavy weights were best, but there was a rapid falling off after the first pen in the light weights. Lord Berners' heavy weights were very fine, and well got up, with wonderful backs, rarely sprung ribs, and small oval, but perhaps a little light under. This was a respectable class, with one exception. It is matter of observation that one exhibitor showed precisely the same class of sheep among the Leicesters as he did in 'other long-wools.' Lord Berners' light weights were not so even as the heavies, and one out of the three had to be killed, and an 'extra stock' sheep put in its place."

"The COTSWOLD men consider their sheep, the long-wools, *par excellence*, and will not sacrifice them as wethers. Hence there were only three pens. Immense pains had been bestowed on the first and second prize fleeces, but it is a great mistake to show them white at Christmas. Their wool looked more like hair than wool, from the use or abuse of soap. In fact, from the way in which they were got up, it was difficult to form an opinion as to whether a Cotswold flock would cut as much and of as good quality as a Lincoln one."

"The LINCOLNS were small in number, and not quite equal to former years. Many of the Leicesters had a trace of the Lincoln, and most of the Lincolns had apparently a strong dash of the Leicester. The KENTS were pretty good, for a sheep which seems to have no very settled type, and whose principal merit is that it is very hardy. Long-wools not qualified to show as Leicesters, were well represented."

The judges seemed pretty generally to consider the SOUTH-DOWNS classes as the best they had ever judged. "There is great diversity of character in the colour of the countenance of these park-bred sheep. This is rather astonishing in this old-established and very nice breed of gentlemen's sheep, which it clearly is, or it would be more adopted by the farmers."

"The SHROPSHIREs were not numerous, but the class contained many pens of great merit, being heavy in mutton, and with wool of good quality; but still the type of these 'rent payers' is not so uniform as it ought to be."

"The OXFORD DOWNS have, perhaps, never been so well re-

presented as a whole, and the want of uniformity in the head could not be fairly urged against them."

[Many of these opinions, published at four or five months after date, only corroborate what we wrote on the afternoon of the opening day, more especially as regards the placing of the Hereford cattle, the character of the Shorthorns, the excellence of certain kinds of sheep, and so forth. By withholding the names of the Judges, moreover, the authority of such communications is materially lessened; as, for instance, in the case of the Hereford Judge who was outvoted. Was the writer "the Hereford man?"—EDITOR M.L.E.]

THE EDUCATION OF THE AGRICULTURAL LABOURER.

This was the subject of discussion by members of the Central Devon Chamber of Agriculture. The president of the Chamber, Mr. C. J. WADE, J.P., took the chair. The subject was introduced by the Rev. J. M. HAWKER, rector of Lideford.

Mr. SOWTON said it must be admitted that there was great difficulty in getting the children to attend school regularly. This was the experience of educators at Ipplepen, where no amount of kindness secured a regular attendance, the most trifling excuses for the absence of their children being given by the parents. He was quite sure that the farmers would co-operate heartily in this educational movement. It was highly desirable to have servants who had received good instruction. Denominational barriers should be broken down, and the work of education zealously carried on without those party prejudices which had hitherto retarded progress. As for the religious question, he hoped he should never see the day when the reading of the Bible in the day-schools was discontinued (applause). Religion in all its plainness and fullness should be taught there. He hoped that the Chamber would give this question of Education their serious attention; he was glad to hear Mr. Hawker express such liberal views thereon. He was against compulsory education.

Dr. BARNHAM thought there was something to be said in favour of compulsory education, however repulsive the word compulsory sounded to the Englishman. There was no unwillingness to adopt compulsory measures in the maintenance of rights, and children had equal rights with other members of the community. He thought they would agree with him that the rights of the children ought to be protected. Parents were compelled to maintain their children—to provide for them the necessities of existence—food, fire, clothing. Compulsion in that respect was not deemed unfair. Were parents then at liberty to neglect the education of their children, to bring them up in a state of mental starvation? Prejudices surely ought not to be raised against the idea of compulsory education. At the same time he thought that the compulsion should not be greater than was absolutely necessary. If parents would only send their children to school, compulsory measures would not be required. Public vaccination was enforced, and no general objection was taken to the compulsion. The "screw" was applied in that respect, and why could it not be applied with equal success with regard to education?

Mr. STOOKE gave a short speech with the text, "I go in for secular education." He was strongly opposed to distinctive denominational teaching; better leave the children alone. He had no objection to the Bible being read without note or comment. He was for a moderate rate supplemented by Government grants. What objection could people have to a good secular school; why should they trouble themselves about religious education? He called it cant. Let the teaching of religion be left to parents, ministers, Sunday-school teachers. Secular education was much wanted by the labouring classes. He mentioned incidentally as an amusing illustration of that fact—that the petition against Mr. Gladstone's bill for the disendowment of the Irish Church had been signed or "marked" in the neighbourhood of the clay pits under the impression that it was for the suppression of Popery (laughter).

Mr. FORD looked upon compulsory education, to a certain extent and under proper regulations, to be absolutely essential; without it any system however comprehensive would be feared to be comparatively a failure. He disapproved of denominational teaching, and was against rates. On the latter point they must not forget that the Chamber was established

partly to look after the expenditure of the county. An educational rate would be a heavy burden upon the tenant farmer and the landed proprietor; the wealthy merchants of Manchester would derive benefits from the scheme at the expense of the cultivators of the soil. He could not think that an educational rate would be just or right unless aided by a Government grant; not yet did he think that in small parishes, Ideford for instance, efficient schools could be maintained without a rate or a Government grant.

Mr. T. WILLS was in favour of Government aid. In every parish he would have a school for the children of the labouring classes to attend. The teacher should be selected according to the requirements of the district, and he should be paid according to results. If by his energy and talent the children under his charge were improving, the inspector should recommend an increase in his salary (Hear, hear).

The CHAIRMAN, in bringing the discussion to a close, said he was glad to find that the subject had been so thoroughly ventilated. With regard to religious education his firm belief was that sectarianism had been the curse of religion for the last twenty years, and had been highly prejudicial to its progress. He should like to see some plan advocated whereby all local districts should have to provide a certain amount of money; but the Government out of the Consolidated Fund should provide a considerable portion, so as to secure free independent supervision and free independent action. If ever that was the case, then he believed that they would soon do away with sectarian teaching in their schools.

Having thus far been chiefly sustained by the clergy, the debate was adjourned.

REVIEW.

THE DRAINAGE OF LAND: By W. H. WHEELER, M. Instit. C.E. Wyman & Sons, Great Queen-street, Lincoln's Inn-fields, 1868.

The practice of *thorough drainage*, that is, of under-draining, for the purpose of clearing the land of stagnant water in the sub-soil, was known to the Romans 2,000 years ago, and by them was doubtless introduced into this country upon the conquest of it by that people; but it appears to have been lost in the lapse of ages and amidst the troublesome times which followed their departure; and it was not until towards the close of the last century that it was recovered—in the first instance by Elkington, who professed to apply it only to springs, and afterwards by Smith of Deanston, who hit at once upon the right design of drainage, namely, opening a sub-channel by which the water that otherwise acts as poison in the soil may escape. Previously, the only method was to cut open drains across the ridges to intercept and carry off the surface water, leaving that contained in the sub-soil to the mercy of the season. If that proved dry, a sufficient quantity evaporated to allow the crops of grain to arrive at maturity; if not, the grain was poisoned, and the crops proved deficient.

The principle on which sub-drainage acts is simple enough. Nature is said to "abhor a vacuum," and no sooner is one created artificially than the air penetrates and fills it; but wherever air insinuates itself it will soon be supplanted by water, if there is any in the neighbourhood. Thus a drain of four feet in depth will attract all the moisture that lies in the soil within a certain distance of it, to the manifest benefit of vegetation. The advantages of draining are not confined to the lighter or mixed soils or the clayey loams. Even the most obdurate clays are composed of particles having small spaces between them—very small, it is true, but now found to be sufficiently wide for the water to percolate towards the artificial vacuum, or channel, that has been prepared for it. The laws of gravity are concerned in this process, for by them the particles of water are made to gravitate towards the centre until it finds its level, which is the ocean.

The three grand requisites in the growth of plants are warmth, air, and moisture. The first, in our climate, is seldom in excess; the second never; the third alone requires to be kept in subordination, by which not only is its injurious excess dissipated, but it leaves access for both air and warmth to enter the soil to a depth they never reached before. "Both these," says our author, "are absolutely necessary to the germination of seed and the growth of plants. The admission of air to the soil not only improves its texture, but also raises the tempera-

ture, and supplies nourishment to the roots of the plants. The difference between the surface and the subsoil is mainly due to the fact of the former being constantly brought into contact with the atmospheric air by ploughing and harrowing. This is exemplified on lands where steam cultivation and deep ploughing are in operation, the depth of the tilth, or workable soil, being equal to the depth at which the ground is stirred up. Jethro Tull, who is called the Father of Husbandry, had such strong faith in the advantages to be derived from the beneficial effects to the soil from the atmosphere, that he went the length of saying that if the ground were only properly cultivated it would always be in a fit condition to support vegetation, without manure. And although this theory has not been supported in practice, yet there is no doubt that a well-drained, and consequently a well aerated, soil requires much less manure than one that is sodden with water."

Nor is this all. "An excess of water will neutralise the chemical decomposition of the substances contained in the manure laid on the fields, and which largely supply food to vegetation. Now, drainage is as useful in promoting the circulation of atmospheric air as in removing the superabundance of moisture; for if the canals or drains are emptied of water, it is evident that its place must be supplied with air. And, as the effect of drainage is, by mechanically improving the texture of the soil, to increase the number of these crevices or canals, so it also increases the circulation of the air which passes through the soil to the drains, and along them to their outlets, thus keeping up a constant supply of fresh air, as necessary to the healthy existence of plants as to that of human beings.

The subject of "air-drainage" is fully discussed in the pamphlet, and its influence shown by experiments on the scale of one acre. The air-drains were laid in at the depth of two feet; and the increase of produce (turnips and wheat) was very remarkable. The work contains ample instructions for draining under all circumstances, and on all soils; and we can safely recommend it to those who are about to practise draining, the advantages of which are not confined to the improvement of the texture of the soil, but extends to the sanitary condition of the district, which is thereby rendered more healthful, and less liable to febrile and other endemic and epidemic diseases. Mr. Wheeler admits that drainage has, in some parts of the kingdom, interfered greatly with the water-courses; and, to counteract this, he recommends planting fir and other plantations, by which the rainfall becomes more regular, and the springs more powerful. This has been the effect of planting the poor, hilly parts of Scotland, where the clearance of the old forests had produced a serious effect upon the springs, still further aggravated by the extensive drainage of the soil effected in that country.

SHEEP HUSBANDRY.—Mr. Blunt, her Majesty's Vice-Consul at Adrianople, reports that the provinces included in the Adrianople Vilayet possessed, in 1867, 5,290,000 sheep and goats, of the value of £1,819,731. The tax levied in that year by the government produced £171,997. The plains and valleys of Thrace and the slopes of the mountains were occupied by innumerable flocks of sheep. Four to five shepherds and six to eight dogs attended a flock of 1,000 sheep. The dogs, generally of the Balkan breed, were excellent guards, and showed great sagacity. The Adrianople sheep suffered from insects and foot-rot, and other epizootic complaints; the "tchitchek," a sort of light variola, was arrested by the process of inoculation. An experienced shepherd on detecting the presence of this contagious malady immediately perforates the ears of all the sound sheep with a large silver needle previously rubbed over with virus from the infected animals. There were two prominent breeds of sheep, the "Kivrigil" and the "Karaboshi." The wool of the former is long, soft, elastic, and twisted into ringlets, and stands very high in the French markets. The value of the annual wool produce of the Vilayet of Adrianople was estimated at £388,213. Sheep, lamb, goat, and kid skins give rise to an active trade. This province alone annually exports about 86,000 lamb-skins to England, and 60,000 kid-skins to England and France. Many of the skins from the sheep and lambs killed in the months of February and March are taken, in consequence of their weight in wool, by the native furriers, and made into cloaks and kاپا, or fur caps, much worn by the Bulgarians.

THE ROYAL DUBLIN SOCIETY'S SPRING SHOW.

The April meeting of the Royal Dublin Society was held on Tuesday, April 21, and the three following days. It is usual to hold the Spring Show of the Society in Easter week; but the Punchestown Races also takes place in Easter week, and this year the Society determined to hold the show in the week following, so that the races might not interfere in any way with it. As regards the number of animals shown, this meeting did not come up to that held last year. The show-yard was visited on Tuesday by his Royal Highness the Prince of Wales, accompanied by the Lord-Lieutenant and his Royal Highness the Duke of Cambridge.

On Tuesday morning the judges commenced their work, beginning with the yearling bulls. The first prize in this section, Mr. Joseph Meadow's roan Bolivar, is a very good animal, that was also awarded the *Farmers' Gazette* cup as the best breeding animal in the yard. He is by First Fiddle (19749). The second prize was a very even bull, Favourite, by Duke of York (28804); and the third a red-and-white bull, Lord Francis. Altogether there were 108 yearling Shorthorn bulls shown.

Amongst the two-year-old Shorthorn bulls, Sovereign is by Royal Sovereign (22802), and at this show last year he stood first as a yearling, and also carried off the Towneley cup. Dr. Collins, by Ravenspur (20628), was first as a yearling at Cork last year, and second at the Royal Agricultural Society's meeting in Dublin last August.

The third prize in the aged-bull section, Lictor, was awarded the first prize as a two-year-old, and the Railway Challenge Cup, at this show in last April. He also carried off the first prize as the best two-year-old at the Royal Agricultural Society's show in August, 1867.

The best two-year-old heifer, Game-hen the Third, was second as a yearling last year, both at this and the Agricultural Society's shows.

The entries in the miscellaneous breeds were not many, the cause of which is the miserable prizes which are given in the various miscellaneous sections, the premiums which are given for poultry being actually more valuable than those given for Herefords, Devons, and other breeds.

The entries in the various sheep sections are never very numerous at this season of the year.

The show of implements was large and varied, many of the chief English manufacturers being represented. Messrs. Hornsby had ploughs, turnip-cutters, steam engines, thrashing-machines; Brigham and Bickerton showed reaping-machines; Samuelson and Co. exhibited reaping and mowing machinery; Ashby and Jeffreys, haymakers, horse-rakes, chaffcutters; Robert Boby had his well-known corn-screens, haymakers; Messrs. Ransomes and Sims had a large and extensive collection, as had also Messrs. Garrett and Son; Messrs. Fowler showed steam-traction ploughing-engine, ploughs, and cultivators; and Lee Batt, some haymakers and drills.

His Royal Highness the Prince of Wales visited the stand of Messrs. Howard, of Bedford, and was shown a miniature model of a plough, with which he expressed himself much pleased. The proprietors having begged his acceptance of it, he has graciously assented, and it has been forwarded to him with the following inscription: "Model of Howard's champion plough, manufactured at the Britannic Iron Works, Bedford, graciously accepted by his Royal Highness the Prince of Wales as a souvenir of his visit to the agricultural show. April, 1868."

JUDGES.

SHORTHORNS: E. Bowly, Siddington, Cirencester; H. Ambler, Watkinson Hall, Halifax; A. Mitchell, Alloa, N.B. MISCELLANEOUS BREEDS OF CATTLE: H. Haywood, Moccas, Hereford; G. Hewson, J.P., Listowel; J. Richardson, J. P., Rosfad, Enniskillen.

FAT STOCK: D. Kerr, Clonin Farm, Edenderry; J. Simpson, Cloona Castle, Hollymount; H. Green, Court Hill, Dunboyne.

SHEEP (LONG-WOOLLED): H. Haywood, Moccas, Hereford; G. Purdon, Lisnabin, Killucan; A. Warburton, Kill, Naas. SHORT-WOOLLED: E. Bowly and H. Haywood.

SWINE: Major M'Cintock, Randalstown, County Antrim; F. Fforde, Raughlin, Lurgan; N. Archdall, Crocknacrieve, Enniskillen.

POULTRY: J. H. Jones, 37, High-street, Fulham, London; E. J. Smith, Islandmore, Croom; J. Borthwick, Prospect, Carrickfergus.

PRIZES.

BREEDING CATTLE.

SHORTHORNS.

Bull, calved in 1867, first prize, Joseph Meadows, Thornville, Wexford; second, Thomas Barnes, Westland, Moynalty; third, Joseph Meadows, Thornville, Wexford; fourth, William Charley, Seymour Hill, Belfast. Highly commended: Richard Challoner, Kingsfort, Moynalty; William Drummond Dunlop, Monasterboice House, Drogheda. Commended: Gustavus Lambert, Beau Parc; and James Moffat, Ballyhyland, Enniscorthy.

Bull, calved in 1866, first prize, Richard Challoner, Kingsfort, Moynalty; second, William Bolton, Island, Kilmuckridge, Gorey; third, N. M. Archdall, Crocknacrieve, Ballinamallard. Commended: William Owen, Blessington.

Bull, calved prior to 1865, first prize, Lady Pigot, Branches Park, Newmarket, England; second, Richard Stratton, Walls Court, Bristol; third, Edward J. Smith, Islandmore, Croom. Highly commended: Wm. Drummond Dunlop. Commended: Major Hamilton, Brownhall, Ballintra; and James Moffat, Ballyhyland, Enniscorthy.

Best Heifer, calved in 1867, Lieut.-Col. R. R. Fisher, Castlelogan, Rathdowny; second, Lieut.-Col. Fisher; third, Earl of Caledon, Caledon-hill, Caledon. Highly commended: Major Hamilton, W. H. Massey, Mount Massey, Macroom. Honorary certificate, Richard Welsted, Ballywalter, Castletownroche.

Best Heifer, calved in 1866, William Bolton, Island, Kilmuckridge, Gorey; second, James Smith, Little Moyle, Carlow.

Best Heifer, calved in 1865, Robert Tennant, Scarcroft-lodge, Shadwell, Leeds, England; second, W. Hutchinson Massey, Mount Massey, Macroom.

Best Cow, of any age, Robert Tennant, Scarcroft-lodge, Shadwell; second, John H. Jones, Mullinabro', Waterford. Highly commended: Sir A. E. Bellingham, Dunany-house, Castlebellingham.

HEREFORDS.

Bull, calved in 1866, prize, P. J. Kearney, Miltown-house, Clonmellar.

POLLED ANGUS.

Polled Angus heifer calved in 1866, silver medal, Wm. Owen, Blesinton.

Polled Angus cow of any age, £3 and bronze medal, Wm. Owen, Blesinton. Highly commended: Wm. Owen, and P. J. Kearney, Miltown House, Clonmellon.

DEVONS.

Devon bull calved in 1867, silver medal, Charles Boyle, Tanagh, Rockcorry, Co. Monaghan. Highly commended: Mr. G. A. Rotherham, Kilbride, Trim.

Devon bull calved before 1867, silver medal, Charles Boyle, Tanagh, Rockcorry, Co. Monaghan.

Devon heifer calved in 1866, silver medal, Charles Boyle Tanagh, Rockcorry, Co. Monaghan.

Devon heifer, calved in 1865, giving milk or in calf, silver medal, Charles Boyle, Tanagh, Rockcorry, Co. Monaghan.

KERRIES.

Kerry bull of any age, £3 and bronze medal, James Brady, The Cottage, county Dublin. Second prize, Samuel Garnett, Arch Hall, Navan.

Kerry heifer, calved in 1866, silver medal, Daniel Bayley, Friarstown, Tallagh, county Dublin. Highly commended: A. A. Lovely, Claremont House, Sandymount.

Kerry heifer, calved in 1865, silver medal, James Smith, Little Moyle, Carlow. Highly commended: Thomas Butler, Priestown House, Priestown, county Meath.

Kerry cow, £3, bronze medal, and second prize, Daniel Bayley, Tallagh.

CHANNEL ISLANDS.

Alderney or other Channel Island bull, calved in 1867, silver medal, James Smith, Little Moyle, Carlow.

Alderney (or other Channel Island) bull, calved before 1867, silver medal, George Dingwall, the Verdon Hotel, Talbot-street, Dublin.

Alderney (or other Channel Island) cow, of any age, £2 and bronze medal, James Smith, Little Moyle, Carlow.

FAT CATTLE.

SHORTHORNS.

Shorthorned-ox, calved in 1865, silver medal, John Meade, Martry, Kells, county Meath. Highly commended: Major Barton, Straffan. Commended: P. J. Kearney, Milton House, Clonmellon.

Shorthorn cow, of any age, silver medal, and second prize, Major Barton, Straffan. Commended: Francis W. Lowe, Kilsbane, Tipperary.

Shorthorned heifer, not exceeding four years old, silver medal, Major Barton, Straffan. Second prize, Blaney T. Bal-four, Townley Hall, Drogheda.

HEREFORDS.

Herefords calved in 1865, silver medal, Miss Fetherstonhaugh, Rockview, Kullucan.

Hereford cow of any age, silver medal, Richard S. Fetherstonhaugh, Rockview. Second prize, Richard Winter Reynell, Killynon, Killucan.

POLLED ANGUS.

Polled Angus ox, calved in 1865, silver medal, Major Barton, Straffan. Commended: Major Barton.

KERRIES.

Kerry ox, calved in 1865, silver medal, Richard W. Reynell, Killucan.

Kerry cow of any age, silver medal, George N. Purdon, Lisnabine, Killucan.

Kerry heifer, not exceeding four years old, silver medal, John Tisdall, Charlesford, Navan; second prize, John Tisdall. Commended: Richard S. Fetherstonehaugh, Rock View, Killucan.

Ox calved in or prior to 1866 (not included in the foregoing sections), silver medal, Wm. Stawell Garnett, Williamstown, Kells, county Meath.

Cow, calved in or prior to 1866 (not included in the foregoing sections), silver medal, Samuel Garnett, Arch Hall, Navan. Commended: Sir Allen Walsh, Bart., Bellykileavan, Stradbally.

Heifer, calved in or prior to 1866 (not included in the foregoing sections), silver medal, Timothy Nolan, Slaney Lodge, Balinglass.

EXTRAS.

Commended: Major Borrowes, Giltown, Newbridge.

S H E E P.

LEICESTERS.

Leicester one-shear ram, silver medal, William Owen, Blesinton. Highly commended: Seymour Mowbray, Killeaney, Mountrath.

Two-shear, and not exceeding four-shear, Leicester ram, silver medal, William Owen, Blesinton. Highly commended: William Owen, Blesinton.

Three Leicester hogget rams, never clipped, £4 and bronze medal, Seymour Mowbray, Killeaney, Mountrath. Second prize, William Owen, Blesinton.

Five Leicester ewe hoggets, never clipped, £4 and bronze medal, Seymour Mowbray, Killeaney, Mountrath. Highly commended: David Hewitson, Bishop's Hall, Waterford.

Border Leicester one-shear ram, silver medal, Loftus H. Bland, Q.C., Blandford, Abbeyleix. Highly commended: Thomas Robertson, Narraghmore, Athy.

Border two-shear, and not exceeding four-shear, silver medal, Thomas Robertson, Narraghmore, Athy.

Three Border hogget rams, never clipped, £4 and bronze medal, Loftus H. Bland, Q.C., Blandford, Abbeyleix.

Five Border Leicester ewe hoggets, never clipped, £4 and bronze medal, Right Hon. Viscount de Vesci, Abbeyleix House, Abbeyleix. Commended: Loftus H. Bland, Blandford, Abbeyleix.

LINCOLNS.

One-shear long-woolled ram, Caleb Going, Traversta, Nenagh.

Two-shear, and not exceeding four-shear long-wool: ram, silver medal, Caleb Going, Traversta, Nenagh.

Three hogget rams, never clipped, £4 and bronze medal, Caleb Going, Traversta, Nenagh.

Five ewe hoggets, never clipped, £4 and bronze medal, Ambrose Boyle, Park-place, Tashinny.

SHROPSHIRE.

Shropshire Down one-year rams, silver medal, Charles W. Hamilton, Hamwood, Clonoe.

Two-shear, and not exceeding four-shear Shropshire Down ram, silver medal, Charles W. Hamilton, Hamwood, Clonoe.

Three hogget rams, never clipped, £4 and bronze medal, James L. Naper, Loughcrew, Oldcastle.

Five ewe hoggets, never clipped, £4 and bronze medal, Lieut.-Colonel Tottenham, Woodstock, Newtownmountkennedy.

FAT SHEEP.

Pen of five long woolled fat widders, exceeding one shear, silver medal, Robert Clancy, Willsgrave, County Roscommon.

Pen of five short-woolled fat widders, not exceeding one shear, silver medal, Charles W. Hamilton, Hamwood, Clonoe.

Pen of five short-woolled fat widders, exceeding one shear, silver medal, Lieut.-Colonel Tottenham, Woodstock, Newtownmountkennedy.

SWINE.

The ages of the animals to be computed up to the day of the show.

COLOURED BREEDS.

Boar, six months, and not exceeding twelve months, £3 and bronze medal, James Ganly, Hillsborough, Lucan. Second prize, Lord Clermont, Ravensdale Park, Newry. Highly commended: Lord Clermont.

Boar, exceeding twelve, and not exceeding twenty-four months old, £4 and bronze medal, Robert G. Gosby, Stradbally Hall, Stradbally. Second prize, Sydney Davey, Redruth, Cornwall.

Breeding sow, in pig, or having a litter within six months, £4 and bronze medal, John J. Lalor, Longford-terrace, Mount-town. Second prize, W. Hutchison Massey, Mount Massey, Macroom.

Three breeding pigs of the same litter, under ten months old, £3 and bronze medal, J. Sydney Davey, Redruth, Cornwall. Second prize, J. Sydney Davey. Commended: J. Sydney Davey.

Litter of not less than six pigs, not exceeding five months old, accompanied by the sow, £3 and bronze medal, John Molloy, No. 72, Mountjoy-street Dublin. Second prize, Wm. Jameson, Montrose, Donnybrook. Commended: Thomas Thompson, Hollywoorath, Cloughranhuddart.

Boar exceeding twenty-four, and not exceeding thirty-six months old, £4 and bronze medal, James L. Naper, Loughcrew, Oldcastle.

Breeding sows, in pig, or having had a litter within six months, Major-General Cunynghame, C.B., Royal Barracks, Dublin.

Three breeding pigs, of the same litter, under ten months old, J. L. Naper, Loughcrew, Oldcastle.

Litter of not less than six pigs, not exceeding five months old, accompanied by the sow, £3 and bronze medal, William Lane Joynt, The Grange Abbey, Raheny.

FOREIGN AGRICULTURAL GOSSIP.

Until recently, Sweden did not figure in the countries which sought abroad outlets for their surplus agricultural products. It provided for its own wants, and had no occasion to direct its attention beyond its frontiers in search of outlets. A German agronomist, however, Professor Guido Kraft, of the Ung Superior School of Agriculture, informs us that this state of things is now profoundly modified, and that Sweden contributes for its full share in the supply of England with meat and other products, such as butter and cheese. In good years Sweden even exports a certain quantity of cereals, and thus becomes, in some measure, a rival to the States of Germany and the north of Europe, the beasts of which scarcely met formerly competitors on the all-attracting all-engrossing markets of the United Kingdom. But, as may be well imagined, all the provinces of the Swedish monarchy are not associated with this movement; by the force even of circumstances, agriculture had no conquests to make in the northern district, in which the rigour of the climate completely excludes cereals, even oats, and leaves only a very limited extent of land available for pasturage. But in the southern part of Sweden, especially in Gothia and in the districts of Schonen and Skarwe, cultivation is carried on upon favourable conditions, which enable it to develop itself and to advance *pari passu* with such European countries as are most renowned for the fertility of their land and the richness of their production. In this favoured part of Sweden the soil descends by almost insensible gradations to the Baltic, the tides of which deposit on the shores considerable quantities of marine plants; the temperature is mild and uniform, and the landscape derives a certain charm from the woods which alternate with the arable lands, and from the numerous herds of beasts and sheep feeding peacefully on the herbage. It is the great Swedish proprietors who have given the signal for agricultural improvements, and who by their example have drawn into the same progressive policy the small landowners, who had been kept back by want of capital, coupled with a certain natural indolence and a profound attachment to ancient customs. The encouragements of the State have happily come to the aid of private initiative, and have especially benefited those who by their studies and excursions in France, Germany, Belgium, and England have been enabled to draw inspiration from good models and to trace out for themselves the policy which they ought to follow. As matters stand at present in Sweden, the landed property of the country is divided between the State, the nobility, and the peasants, who, united to the *bourgeoisie* form the third order, while the two first orders are constituted by the nobility and the clergy. Without entering upon an examination of the political constitution of Sweden, it will suffice for us to say that feudal customs have not completely disappeared, and that some estates still enjoy certain immunities in exchange for other obligations which are imposed upon them for the service of the Crown or the State. As a general rule, the large Swedish landed proprietors cultivate directly their own estates, which resemble châteaux, and which are surrounded with well-maintained parks and gardens, while the working buildings often present a certain elegance, and comprise granaries, sheds, stables, &c. The extent of large landed estates in Sweden ranges generally between 600 and 2,000 acres of cultivable land, without reckoning meadows, which represent generally a third or a fourth of the whole surface; and to the farm-buildings one usually finds attached a distillery of beet-root or potatoes, although the revenue derived from these farm annexes has notably diminished since the Government, in order to restrict among the lower classes the use of brandy, has increased the duties imposed on the production and consumption of alcohol. All the raw materials which the radical measures adopted (the utility of which has been much disputed) have taken away from distillation have gone to increase the quantity available for exportation. Industry is represented besides, on great Swedish farms, by wind and water-mills, which put in motion two or three pairs of stones. We must also mention two manufactories of beet-root sugar, one of which is established near Stockholm, while

the other is the property of a society of shareholders, and has its centre of operations near Sabyholm, in the district of Schonen. Professor Guido Kraft, it should be observed, has no very great confidence in the future of these establishments; and, in expressing his apprehensions, he bases them on the feeble yield of sugar derived from Swedish beet-root. It should be remarked, however, that the production of beet-root sugar in Sweden is subject to no tax; and, from this alone, it may be said to enjoy a real protection, in a country in which foreign sugar has to bear a duty varying from £1 8s. to £1 17s. 6d. per 2 cwt., according to its quality. Distillation and sugar-making are, however, only accessory industries; and agriculture in the south of Sweden derives its principal profit from the animals which it breeds and which it forwards to the northern districts, from those which it grazes and exports abroad, and, finally, from the milk, butter, and grain, which it embarks in its ports for the markets of the United Kingdom. This export commerce may be said to be still in its infancy, since a direct steam navigation service will soon unite Gothenburg to London via the Skaager Rack; and the losses of time and money involved by the Lubeck and Hamburg route will be avoided.—Rather numerous sales of reproducing animals have taken place in the first fortnight of April. At the Caumont Sheepfold, belonging to M. Vuaffart-Oudin, the "adjudication" attracted a great number of visitors. Only 30 rams and some lots of ewes were sold; but since the sale the proprietor of Caumont has concluded several important transactions with agriculturists of Prussia, Hungary, and Southern Russia. Next came the sale of M. Garnot, of Genouilly. The influx of visitors was not so great at Genouilly as at Caumont, but 50 rams were "adjudged" at £8 to £12 each, while, after the day's public business, 100 ewes were sold privately. About 50 head of sheep were also purchased by a German breeder, Herr Otto Braunschweig, of Leipzig, at an average price of £11 each. M. Garnot, it may be well to state, has applied himself for the last twenty years to the improvement of his flock, and to rendering the merino a sheep both for wool and meat. This is also the object which has been pursued by M. Vuaffart-Oudin. Sales of rams from the imperial sheepfold of the Haut-Tingry have taken place at the Imperial veterinary school of Alfort, and at the Haut-Tingry. Twenty-three rams were disposed of at Alfort for £227, giving an average per head of £18 11s. 2d. The pure Dishleys attained very high prices, one of them changing hands at no less than £63, and two others at £42 each; even the lowest-priced brought £21; the average of the whole being £35 12s. each. The Dishley merinoes—two-thirds Dishley blood—were sold, the dearest at £24 7s. 6d., and the cheapest at £8 12s., the average for the whole being £15 8s. The dearest of the two-thirds blood merinoes made £11 19s. 10d., and the cheapest £9 12s., the average for this description being £9 8s. The top price for Southdowns was £13 9s.; the cheapest lot in this class made £8 10s., and the average for the whole was £9 0s. 10d. At the Haut-Tingry, twenty-one rams sold for £335 3s., giving an average of somewhere about £16 each. The Dishleys at the Haut-Tingry sale ranged between £29 8s. and £12 12s. each, the average being £21 2s. 6d. The New Kent ranged between £12 12s. and £8 12s., the average being £10 10s.; the Dishley merinoes (two-thirds Dishley) ranged between £20 5s. and £8 12s., the average being £16 2s. 6d. each; and the Dishley merinoes (two-thirds merinoes) ranged between £12 12s. and £5 5s., the average being £8 16s. each. Upon the whole, the total product of these two sales was £762 for 44 rams, giving an average of £17 6s. 6d. each. Numerous breeders attended the two sales, and the biddings were animated. Rams of the pure Dishley breed were much sought after; and it was the same with the Dishley merinoes (two-thirds Dishley blood). The principal purchasers were from the departments of the Eure-et-Loire, the Oise, the Aisne, the Pas-de-Calais, the Seine-et-Oise, and the Somme. At a sale of Durham stock at the Carbon Imperial establishment, directed by M. Zielinski, eight bulls realized £842, giving an average of £105 5s. per head; twelve cows

and heifers made £873 12s., giving an average of £72 17s. per head; and one heifer, sold separately, made £16 16s. The total proceeds of the sale were thus £1,732 8s.—A steam ploughing trial, inaugurated at Châteauroux, on the occasion of a recent show of fat stock at that town, has been pursued

with success in the department of the Indre. It is stated that the Italian Government proposes to offer to Signor Magni a complete set of Fowler's steam-ploughing apparatus, in testimony of his earnest efforts in the matter of steam-ploughing.

REPORT ON THE TRIALS OF FIXED AND PORTABLE STEAM-ENGINES AT THE BURY ST. EDMUND'S MEETING:

[FROM THE NEW NUMBER OF THE ROYAL AGRICULTURAL SOCIETY'S JOURNAL.]

The following Report was received by the Stewards of Implements at the Bury St. Edmund's Show too late to be inserted in the last Journal.

TO THE COUNCIL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MY LORDS AND GENTLEMEN,—We have the honour to hand you our Report of the Trials of Fixed Steam-Engines and of Portable Steam-Engines at the Meeting of the Society held at Bury in July last.

Fixed Steam-Engines.

We awarded the first prize to Messrs. Clayton, Shuttleworth, and Co., who exhibited an engine well designed and thoroughly well made, which showed a very low consumption of fuel. The cylinder was steam-jacketed, and the jacket was in full use during the trial, although, from the relative positions of the Society's boiler and the engines to be tried (it now being possible to run the condensed steam from the jacket back to the boiler), the water was suffered to escape.

The second prize was awarded to Messrs. Tuxford and Sons. This engine also had a steam-jacketed cylinder, and was in other respects well designed and very well made; but during the trial the steam was not kept on the jacket, and we believe that this had the effect of increasing the amount of steam used.

The engine of the Reading Iron Works Company we highly commended, as in its consumption of fuel it was but little above that of Messrs. Tuxford, and the workmanship was very good. This engine was furnished with a means of varying the expansion without stopping the engine. This is an extremely valuable adjunct to an engine when it is in charge of an intelligent driver.

We commended the oscillating engine of Messrs. Deacon and Wood, because, although a very cheap engine, it gave a very good result as to consumption of fuel.

As regards the portable steam-engines, whether single or double cylinder, these, so far as noticed in our award sheets, were put through a double trial, the second being 50 per cent. of load in excess of the first.

Single Cylinder Portable Engines.

In this class we awarded the first prize to Messrs. Clayton, Shuttleworth, and Co., who produced a thoroughly well designed and well made engine, which did its work with an extremely small consumption of fuel.

The second prize we awarded to Messrs. Tuxford and Sons, whose engine was also extremely well made and designed, and who gave proof of an economy but little below that of Messrs. Clayton, Shuttleworth, and Co.

The Reading Iron Works Company's engine we highly commended. It was extremely well designed and well made. This engine was fitted with a means of varying the expansion, similar to that employed in the fixed engine by the same makers. See our remarks thereon.

We also highly commended the engine of Messrs. Brown and May, because it gave, without any separate expansion valve, a very good economic result. It was a very plain, serviceable engine.

Of the double cylinder portable engines four only were tried twice.

The first prize was given to Messrs. Clayton, Shuttleworth, and Co., whose engine, well designed and well made, worked with great economy.

The second prize was given to Messrs. Ransomes and Sims, whose engine was of extremely good workmanship, and gave a performance in respect of coal differing but by a small fraction of a pound from that given by Messrs. Clayton, Shuttleworth, and Co.

The engine of Messrs. Tuxford and Sons well deserved the high commendation we gave it, although we could not lose sight of the fact that its price was higher than that of its competitors.

The engine of Messrs. Brown and May we highly commended, because, as in the case of their single engine, it was of a plain, serviceable class, and yet gave a very good result.

We have the honour to be, my Lords and Gentlemen,

Your obedient servants,

JOHN V. GOODR.

F. J. BRAMWELL.

JAS. EASTON,

London, November 7, 1867.

Judges of Steam-Engines.

TO THE SENIOR STEWARD OF IMPLEMENTS AT THE BURY SHOW OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MY LORD,—We have the honour to submit for your Lordship's consideration and that of the Council some recommendations as to the preparations for and conduct of the trials of steam engines in future years, which are prompted partly by the difficulties experienced this year, and the consequent delay of our award and also of our report; and partly by the consideration of the fact that the circumstances under which the trials take place, although affording results which are for many purposes very valuable, do not correspond with the circumstances under which an engine would be worked by a purchaser.

The Fixed Steam Engines (as you are aware) are supplied with steam from a boiler belonging to the Society, but attached to by the workmen employed by each exhibitor. Although there is not any clause forbidding the exhibitor to heat the feed-water supplied to this boiler, nevertheless there seems to have been an understanding among them that this should not be done; we think it would be well if it were stated in the "conditions" hereafter to be published, that the exhibitors will be allowed to apply any feed-water heater that they think fit, so long as such heater derives its heat from the exhaust steam only, and so long as the heated water can be brought to the feed-pumps supplied by the Society. Our object in making this suggestion is to do away with the anomaly that now exists between the performance of the fixed engines and the portable engines—an anomaly largely due to the fact that nearly the whole of the portable engines use feed-water heaters, while the fixed engines do not use them upon their trials.

It will be in your recollection that on this occasion the trials were directed to be made with each portable engine. The first with the load equivalent to the nominal power of the engine; the second with the load corresponding to a power 50 per cent. in excess of the first.

We find the relative results of these trials (except in one or two cases, for which we can partly account) to be so nearly alike, that we think only one trial in respect of load need in future be made, such trial to be either with the ordinary load or the excess load, as may be decided by the Council.

At this trial we think it should be made a condition that only one man should be allowed to attend to the fire, the blowing, the feed-water, the preparation of the coal (such prepara-

tion to be made while the engine is running), in fact, to attend to the whole work of the engine.

At the present time we have seen as many as six men engaged in attending one engine; viz., one man breaking the coals into pieces the size of small walnuts, another man putting these pieces on to the fire with a shovel like a money-scoop, another man oiling the cylinders, another oiling the bearings, another putting the feed-water into the heater by ladefuls at a time, and another ready for any odd job that might arise. This clearly is a condition of things that could not exist in ordinary work, and we therefore think it most desirable that in trials also made with portable engines, the whole attendance for each engine should be done by one man.

At the same time we think it important for instruction to engine-makers and to purchasers that the very best results to be obtained in reference solely to consumption of fuel should be known, and we therefore are of opinion that each exhibitor should be allowed to have a second trial at which he might employ (as he now does) as many men as he pleases. It is clear that time will not admit of three trials being made, two trials are the utmost that can be attempted; and we are of opinion that more useful results will be obtained by the course we have ventured to suggest than by continuing the two trials at different loads as at Bury.

We are also of opinion that it would be an extremely easy matter to make provision for taking accurately the amount of water evaporated by each boiler during the trial of its engine, and thereby to arrive at how much of the result was due to the boiler and how much to the engine. We are aware, it may be said, that the only thing in which the purchaser is interested is the final result of work done by the engine for the coals consumed, and that he is not interested in the steps by which this result is reached; but we are of opinion that this is a very narrow view to take, and that the purchaser is the person, above all others, interested in such details of information as are necessary to enable makers of engines to discover the points which need correction, and thus to keep up progressive improvements in the amount of work done for a given quantity of fuel.

We also recommend that all brakes intended to be used should, previously to the trials, in addition to being put into perfect working order, be actually worked to a sufficient extent to overcome the effects of standing idle.

Each brake should have appointed to it an intelligent man,

thoroughly capable of working and regulating it with certainty.

As soon as it is known what number of engines are intended for trial, the time necessary to make the trials should be precisely estimated, taking into account the number of brakes to be used; and the judges should so begin the trials as to ensure their being completed by the evening of the Friday before the show opens, and thus ensuring for themselves time on the Saturday carefully to consider the results and make their awards, so that the exhibitors may have them on the first day of the show.

The water tanks should be placed at a height of not less than 10 feet above the level of the trial platform, and the hose-pipes and all outlets should be not less than 2 inches inside diameter, and should be proved all tight and secure.

With respect to the printed "conditions" of trial, we think that—

Each boiler should be fitted with check-valve for the feed-water in addition to the two pump-valves specified in Clause 9, Clause 13. The examination should be made at such time and in such manner as the Judges may determine.

"Special Arrangements."

Clause 4 should follow Clause 7, and read "his own driving strap" for each description of engine. Several exhibitors at the Bury Show appeared to be under the impression that the Society provided straps for portable engines.

Clause 8. Is not the first week in July much too near the time of trial to allow the necessary arrangements to be perfectly?

Clause 9 we think should be modified as follows: All the fixed engines intended for trial must be fixed in their places according to the order of trial on the trial platform by a given time, viz., by the of , and strictly in the position and under the conditions required; and all portable engines must be placed (so far as the allotted space will allow) also in the order of trial: and those for which there is not room on the platform must be drawn up in front of it not later than the evening of the day above-named.

We have the honour to be, my Lord,

Your obedient servants,

JOHN V. GOOCH,
F. J. BRAMWELL,
JAS. EASTON,

Judges of Steam Engines.

November 7, 1867.

FINANCIAL BOARDS.

A general meeting of the members of the Staffordshire Chamber of Agriculture was held on Saturday week, to consider the questions of the proposed County Financial Boards and of local taxation. The Earl of LICHFIELD presided, and introduced the first subject by referring to the leading features of Mr. Wyld's bill, and said that as a county magistrate he should not oppose any resolution in favour of the establishment of County Financial Boards.—Such a resolution was proposed by Mr. CARRINGTON, and seconded by Mr. NORRIS.—The Hon. and Rev. A. C. TALBOT said the principle often insisted upon, that the ratepayers ought to have a voice in the administration of the rates, was a just one; but through their representatives in Parliament they had a voice already. He expressed a conviction that under the administration of a County Financial Board the expenditure in Staffordshire would be augmented rather than diminished.—Mr. MASEN was not disposed to press the question so far as their own county was concerned; but the Chamber had to look at the circumstances and requirements of other counties, where any opinion expressed by a proprietor upon a subject affecting public interests was too often pooh-poohed, and not seldom by a magistrate whose connection with the county was of less consequence than his own. This being the case, it was desirable that the views of the meeting on the question in hand should be in accordance with those expressed by other Chambers; in other words that it would be wise to pass the resolution, which was accordingly done.—The discussion on taxation was introduced by the subjoined resolutions of the Somersetshire Chamber:—(1.) "That the taxation now levied under the name of 'poor rate,' to the extent of nearly £10,000,000, annually, bears unfairly upon income arising from real property;" (2.) "That the

exemption from the rate of income arising from personal property is unjust, and therefore requires the early and serious consideration of Parliament."—The Hon. and Rev. A. C. TALBOT observed that the new law tended to increase the rates in the rural districts, and to decrease them in towns. The Chamber had not now to consider its general effect, but to look at its effects upon the ratepayers, to many of whom it proved a great hardship. His own rates, for example, had gone up one-half since the law came into operation, while those of town residents had considerably diminished.—Mr. CARRINGTON expressed his concurrence in the observations of the hon. and rev. gentleman, as did Mr. MASEN, who moved, "That this Chamber is of opinion that the property tax is a more equitable basis on which to lay the local rates than the present system, seeing that little more than one-third of the property is subject to rates for local taxation."—The motion was seconded by Mr. T. C. SMITH.—An amendment moved by Mr. BRADBURN was not seconded, and the original motion was unanimously adopted, after a few remarks from the Earl of DARTMOUTH against policemen being engaged in preserving game.—A brief conversation afterwards took place respecting a resolution of the North Cheshire Chamber upon equalising the burden of the Cattle Plague Compensation Fund. The following motion was carried:— "That the principle of taxation under the compensation clauses of the Cattle Diseases Act is opposed to the usual fair rules of legislation, and particularly oppressive on the ratepayers of particular districts, inasmuch as the stamping-out process was adopted for imperial benefit; this Chamber pledges itself to support every measure that may have for its object the relief of the taxed districts by retrospective legislation, if any such measure be introduced."

CALENDAR OF AGRICULTURE.

The work of the farm now presses closely, and requires an exertion and diligence that each crop have the due and proper order of performance. The planting of beetroot and potatoes is to be finished—if any remains undone from last month, and also the sowing of grass-seeds on wheat and barley grounds. The horse and hand-hoeing of drilled-crops will be finished this month, as wheat and early crops. Allow no tall weeds to be seen.

Sow Swedish turnips by the middle of the month, the purple and yellow-topped varieties, and continue with Aberdeen yellows as a later sowing; apply an ample quantity of farm-yard dung in a fresh fermentation from a newly-turned heap of a winter's collection, and sow the seeds over it as quickly as possible in a fresh earth: sow also with bones and guano, on the finest qualities of land. In dry weather roll the drills immediately; in showery weather it may not be required.

Plant cabbages, kohl-rabi, savoy, and winter brocolis, from the seed-beds, on drills 30 inches apart and 20 to 24 inches along the drills. Apply very moist half-rotten farm-yard dung in abundance on strong lands too stiff for turnips, and set the plants by dibble during the wettest weather in which the work can be performed, as the plants require much moisture. Fill up the blanks with fresh plants, in order to procure an even crop. Sow early turnips for an early crop, as tankards and whites; and sow rape on any strong soils, to be consumed on the ground as preparatory for wheat.

Pare and burn lands with rough swards of vegetable matters, and spread the ashes to be cooled. Prepare without intermission the lands for green-crops, and also clay grounds for wheat.

Watered meadows are shut up for hay, and all gates and fences must be thoroughly repaired for summer use.

Stall-fed cattle will now be disposed of—the fat ones to the butcher; and the more backward in condition will, sent to the pasture-field, to be fattened on grass. All cattle will now go to grass: the milch cows in a field of permanent pasture, adjacent and convenient to the homestead, provided with water and shelter, and improved by the frequent top-dressings and the sowings of clovers and strong perennial grasses; the store cattle are placed

in the pasture-fields, arranged according to age and size—a proper arrangement conduces much to the thriving of the animals. The calves of the year must be similarly arranged, the oldest in a grass-paddock, provided with water and shelter shed, and have one suckling daily and supplied with fresh clovers and vetches in racks. Spare no pains or expense on young animals: the youngest calves in the pens have green food given them, to learn the use previous to their being turned out.

The latest lambs will now require much attention in having the best grass on the farm in order to raise an equality with the foremost. Nothing more clearly shows the good management of animals than an equality both in the breeding and in the condition.

The ewes and lambs that are consuming the early vetches and rye must have fresh food every two days. Begin the soiling of cattle and horses in the yards with rye, vetches, and irrigated grass; give the green food to the milch cows in the shed and yards if the pasture-field be not abundant.

Feed the store pigs with clovers and vetches, and afford ample littering to all animals.

As the early soiling-crops are consumed, plough the land for turnips with bones and guano.

In the end of the month put mares to the stallion, and geld colts, though this operation may be more easily performed the previous autumn.

Dig hop-plantations and tie the bine to the pole.

Wash sheep by hand in a clear running stream, and to prevent the maggot-fly sprinkle the animal from head to tail from a dredging-box with a mixture of hellebore-root-powder and black brimstone $\frac{1}{2}$ lb. to $1\frac{1}{2}$ lb.

Weed young quicksets, without exposing the roots to the sun's rays in dry situations; rather leave the weeds to moisten the roots, provided the upward growth of the young thorn shoot is checked.

No month in the year brings more business to the farmer than the present, and if ground be lost it will rarely be recovered during the following season. The preparations of the turnip and clay fallows are in the critical season—the crops must be planted and the rest prepared for the utmost attention and exertion.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Kidney beans, scarlets, and painted runners are first called for; commence with the dwarf kind for a full crop in July: repeat in the third week. The variegated sorts derive the utmost benefit from having a layer of moist decayed mixen dung in a shallow trench a few inches below the earth; return the soil over the manure, press it moderately firm, and sow about three inches below the upper

surface-level, covering to that depth with earth. The dry and often scorching weather of May and June will show the utility of this depth, as the plants will never become flagged. The directions as to warmth of soil still hold good: the seed perishes in wet, cold ground, and yet does not advance well in a dry arid soil—hence the truth of more to sowing in pots; and dwarf French beans claim a similar treatment, the season and weather

being the best directors. It is also a good policy to be prepared early in April with a stock of beans in pots, and to trust more to open ground-sowings during summer.

Sow cucumbers on a ridge over manure.

Marrowfat peas and all large roots are the most suitable henceforward. To guard against mildew trench the ground of a row three feet wide and one deep, incorporating a rich compost or very rotten dung with the bottom spit; water profusely by the rose; fill up with the soil, and raise it to a flat ridge a few inches high along the centre; water again so as to ensure a thorough wetting of the ground. In a day or two after, sow the peas an inch asunder in quincunx order. By following the above directions a fine late crop of peas, sown even six weeks hence, may be secured as late as Michaelmas.

The late crops of potatoes should be now planted in the early month, if not already set; let the rows, where practicable, range north and south, to admit of an equable diffusion of sunlight.

Repeat all the sowings of last month, except the tap-rooted plants, in order to maintain the successional supplies of potatoes, peas, kales, and sprouts, cabbage, savoy, spinach, onions, celery, kidney beans, lettuces, cauliflowers, and sea-kale. The kitchen garden must be regularly divided into plots, as the fields of a farm, in which the crops are sown in a regular alternation; the tap-roots and flesh bulbs that pierce or divide the soil, and emit a fecal exudation, being succeeded by the fibrous roots that creep horizontally to derive the benefits of the cultivation and manuring of the previous crop. This rule must never be neglected, or at least but seldom followed in the plants of the same kind succeeding each other.

Sow dwarf Indian corn about the middle of the month.

Suffer no weeds to prevail, and where there is time to Dutch-hoe and finely rake all portions of cropped ground, the extreme neatness of the garden will amply repay the trouble, showing a good management in other points as well as in this portion of business.

FRUIT DEPARTMENT.

Peach, nectarines, and apricots, if any are used, require to be disbudded—that is, pinch out with the thumb-nail all foreright and back shoots; also so many laterals as cannot be wanted, always leaving a well-placed shoot at or near the origin of a fruit-bearer of this year. Water strawberries if the ground and weather be dry: the finest bloom perishes under a scorching sun of May and June.

Pines, grapes, and melons, which may be grown by the gentleman-farmer, all require full-growing heat, but plenty of air during fine sunny mornings, except the succession pine-plants, which cannot be kept too warm, provided the atmosphere within be moist and vaporous.

Vines in the open air require watchfulness to secure the fruit becoming spurs in time, and to remove the entirely useless shoots. Those in a vinery must have a moist atmosphere, but no sprinkling on the underside of the leaves unless infested with the acarus. Thin the clusters in neat

regular order, taking care not to wound the skin of any adjoining berry.

FLOWER GARDENS AND PLEASURE GROUNDS.

The shrubberies are sometimes rendered littery by the falling of laurel and other evergreen leaves; let such be removed to the compost grounds. Eradicate lilac suckers, and keep all shrubs in figure by judicious thinning back to larger branches; attend to every office of neatness and order as respects weeds, rolling of gravel, and the lawns prior to mowing.

Sow annual seeds of flowers in the borders, biennials in a nursery-plot for the next season, as for Queen and German stocks. Propagate by cuttings and slips wall-flowers, rockets, &c., and place a glass over to shade them.

This is the month for the bedding-out or the parterre system. It requires great judgment, especially where the collections are mixed: taste must guide, but the best effect is produced in plots on lawns, whatever be the figure, by grouping in masses, always allowing space sufficient for growth, that there be no needless crowding. Many elegant plants, as the pelargoniums, are thus displayed to perfection; but many of the best plants perish or are seriously injured by only three hours' frost; therefore, no final regulation should be attempted till the end of the month.

Roses must be watched: the worm in the bud is a sore enemy. Stir the surface of the ground when nearly dry after heavy rains—it is a great thing to know how to use the Dutch-hoe and rake adroitly.

Attend to air and water in all glass structures.

THE PECK PER ACRE.

SIR,—The peck of wheat per acre sown the second week in November looked like a fallow all winter, but is now, after hoeing, branching abundantly, and my labourers predict that it will be as good or better than the rest of the field sown thickly with 1 bushel per acre. Every year I sow half an acre with half a peck of wheat, in the midst of a thicker sown crop, putting it in the same day and under the same circumstances in the various fields, as they come in rotation. By this means I arrive at safe conclusions, and I would strongly recommend my agricultural friends to follow my example by thus experimenting on a small and uninjurious scale. It would abolish many prejudices, and they are bound for their own interests to ascertain the most profitable quantity of seed. My four years' trials have resulted in 58, 57, 36, 36 bushels of wheat per acre, the two first good wheat years, the two latter unfavourable. I still continue to drill 4 pecks of wheat, 6 pecks of barley, 8 pecks of oats, as my general sowing—a trifle more on the light land; but I am getting more and more convinced that, with high clean farming, and the drill, we may, in Essex, reduce our wheat to 2 pecks. On light lands we need not fear wireworm, if we use 6 bushels of salt per acre about February, or early in March. By having our drill-cups and wheels arranged like those of Mr. Hallett, at Brighton, we can put in very small quantities of seed. It does amaze me to read that 7 bushels per acre of oats are still sown in Scotland, and that thin sowers pride themselves upon putting in only 5½ bushels! I presume that this is done broadcast and the measure a Scotch acre. I am satisfied, however, that such a system can never result in such crops as we generally grow on this farm—say from 8 to 13 quarters of black oats per English acre.—I am, sir, yours,
April, 1868.

J. I. MECHL.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR APRIL.

The weather having been remarkably fine, the crops in all parts of England have made considerable progress towards maturity. The young wheats are looking remarkably strong and healthy, and promise a full average yield. Great exertions have been made by our farmers to increase the breadth of land under wheat-culture this season, owing to the high prices which have ruled for both red and white qualities. The future of the wheat trade is regarded with considerable interest. On the one hand it is contended that there is ample room for higher prices: on the other, that present rates are dangerously high, notwithstanding that the wants of France are still very great, and that we shall receive no assistance from that quarter this year. It is possible that really fine wheats will continue to command current rates for several months; but we doubt much whether there is room for any permanent decline in the quotations, even though our own harvest should turn out abundant. Much, of course, will depend upon the power of Russia and the United States to supply us with food. It is evident enough that both countries have surplus stocks of produce still on hand; but the high prices demanded in America, and the firmness with which both wheat and flour are held by speculators, indicate only moderate shipments to the United Kingdom between this and the close of harvest-work. It is estimated that there are nearly, or quite, 1,000,000 quarters of grain and flour in warehouse in the United Kingdom; but from the fact that the quantity of English wheat in stock is very small for the time of year, and in very middling condition, the whole of it will be required for home consumption. On one point, there is very little doubt, viz., that our importations will be equal to our requirements; hence, we have very little cause for anxiety as regards the future value of produce in this country.

The sowing of spring corn has been brought to a conclusion under favourable auspices. The barleys are looking well above ground; whilst oats, beans, and peas, promise a good return. Those articles have been in steady, though not to say active request, at strong quotations.

No change of importance has taken place in the value of any kind of produce on the continent. The transactions for forward shipment have been rather numerous.

The wool trade has shown considerable firmness, and the quotations have been fully supported. The quantity of colonial wool now on hand for the next public sales is about 180,000 bales. Fully 80,000 bales have yet to arrive, so that over 200,000 bales will be brought forward at the next series. This large quantity will test prices to some extent; but, as wool is still very low in price, our impression is that the fall, if any, will be comparatively trifling. The new clip of English wool has turned out well, and of fine quality.

Fine samples of potatoes have been steady, at very full prices. Inferior kinds have ruled very inactive, at about the rates current in the previous month. The imports from the continent have been tolerably good for the time of year, and some quantity of new has been imported from distant ports.

The supplies of hay and straw have been rather extensive. A moderate business has been doing in them, at about stationary prices. Meadow hay has realised £3 to £4 7s. 6d.; clover £3 10s. to £5 5s.; and straw £1 10s. to £1 16s. per load. The stocks on hand are still large. As there is every prospect of a good hay crop this year, we may anticipate the continuance of current rates for some time.

In Scotland, the crops generally are looking well. Wheat and all other kinds of produce have changed hands steadily, and the quotations have been well supported.

The Irish markets have been firm for all descriptions of grain. In prices, however, very little change has taken place.

REVIEW OF THE CATTLE TRADE DURING THE
PAST MONTH.

Notwithstanding that the imports of foreign stock into London last month were only moderate for the time of year, the total supplies of Beasts brought forward in the Metropolitan Market were seasonably good, whilst their general quality was very prime. The fluctuations in prices were trifling; yet, on the whole, a steady business was transacted in most breeds.

The numbers of Sheep exhibited were tolerably extensive, and in excellent condition. Prime Down and half-bred moved off steadily, other breeds slowly, at about stationary prices. The highest figure, in the wool, was 5s. 6d.; out of the wool, 4s. 10d. per 8lbs.

Lambs, though in full average supply, sold steadily, at from 6s. 6d. to 7s. 8d. per 8lbs.

In Calves very little was passing, although the numbers brought forward were by no means extensive.

Prime small pigs changed hands freely at full quotations, but large hogs were very dull.

The imports of foreign stock into London were:

	Beasts	Sheep and Lambs	Calves	Pigs	Head.
	3,056
	13,743
	1,306
	160
	Total				18,267
Imports in April, 1867	36,925
" 1866	36,925
" 1865	27,816
" 1864	15,442
" 1863	16,021
" 1862	9,616
" 1861	11,119
" 1860	10,489
" 1859	8,888
" 1858	5,998
" 1857	4,814
" 1856	1,924
" 1855	4,253
" 1854	4,760
" 1853	14,787

The total supplies of stock offered and disposed of in the Metropolitan Market were as follows:

	Beasts	Sheep and Lambs	Calves	Pigs	Head.
	16,280
	139,600
	1,403
	1,765

COMPARISON OF SUPPLIES.

	April.	Beasts.	Cows.	Sheep and Lambs.	Calves.	Pigs.
1867	16,250	120	113,770	977	1,253
1866	11,350	—	120,180	208	3,331
1865	19,670	582	92,850	1,279	3,362
1864	22,200	497	107,010	1,596	3,100
1863	19,290	491	113,060	1,341	2,541
1862	19,000	515	110,500	1,077	3,051
1861	17,140	510	102,630	497	2,662
1860	18,512	489	114,450	1,846	2,140
1859	16,850	390	110,114	420	1,800
1858	17,950	400	104,390	1,332	2,097
1857	18,601	460	92,810	1,240	2,025

Home supplies came to hand as under:

	April.	April.	April.
From—	1866.	1867.	1866.
Norfolk, Suffolk, &c. ..	6,800	6,800	2,500
Other parts of England.	4,020	2,150	500
Scotland	1,337	670	1,571
Ireland	290	3	66

Beasts sold at from 3s. 2d. to 5s., mutton 3s. 4d. to 5s. 6d., lamb 6s. 6d. to 7s. 8d., veal 4s. to 5s. 6d., and pork 3s. 4d. to 4s. 4d., per 8 lbs. to sink the offal.

COMPARISON OF PRICES.

	April, 1864.			April, 1865.		
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beef from	3	4	5	0	3	6
Mutton	3	8	6	0	4	0
Lamb	6	0	7	8	6	8
Veal	3	4	5	6	4	8
Pork	3	6	4	6	3	6
	April, 1866.			April, 1867.		
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beef from	4	0	5	6	3	4
Mutton	4	6	7	0	3	6
Lamb	6	8	9	0	7	0
Veal	5	4	6	4	4	6
Pork	3	10	5	0	3	0

Newgate and Leadenhall were well supplied throughout the month, and a steady business was transacted. Beef realized from 2s. 10d. to 4s. 6d., mutton 2s. 10d. to 4s. 6d., lamb 6s. to 6s. 8d., veal 3s. 4d. to 5s., and pork 3s. to 4s. 6d. per 8 lbs. by the carcase. The imports of foreign meat into London were confined to about 260 tons.

CUMBERLAND.

The latter end of the autumn of last year, and the early part of winter, up till the beginning of the new year, the weather was remarkably fine, mild, and calm, with very little rain; consequently, the land was easily cleared of potatoes, turnips, &c., without much damage being done to it by carting off the green crop. Wheat was put in under very favourable circumstances; a great breadth was sown, and the plant looks so far very promising. The wireworm has thinned some fields; but this can have very little effect upon the gross produce of the kingdom. In addition to this, the fine weather gave an opportunity, which was not neglected, and much stubble land was turned over, and farm-work generally was got well in advance. With the new year came a change of weather, and the remainder of the winter was one of the wettest, and certainly the most windy on record, and farm-work was for a long time at a complete standstill. The rain, with very little intermission, continued till near the end of March, and was followed by a week or two of very fine weather. A change took place on the 12th instant; since then rain has fallen regularly every day, and the land is completely saturated, and work at a stand; and planting potatoes and preparing the land for that and other green crops is very far behind that of other years, and at present there is no appearance of any improvement. Grass is very forward, and the meadows and pastures are wearing the garb of the latter end of May, there having been little cold wind from the east or north to check vegetation. The price of wheat and other grain continues high, with small markets, which shows that the stock of grain on hand is not large; if it was the price would tempt farmers to bring it to market. Live stock of every kind sells at good prices. Beef makes a high price, and so does mutton. Upon both a considerable rise has taken place since last year. There is a great demand for store cattle, and high prices have been realised. A very great advance has taken place since the autumn in sheep. Lambs bought then are now selling to graziers for more than double their original cost, wool, as well as mutton, having looked up. Grass parks let for the summer by auction have been letting at advanced prices; so both fat and store stock must sell well at the end of the season, or the speculation will not be a profitable one. There are still some turnips on hand, but not many, which were intended to be eaten on the land by sheep, but they belong to parties who were induced by the high prices given at the beginning of the season to want still higher, and have consequently missed their market, and will perhaps be unable to meet with a customer at any price. They will know better how to act in another year. The money loss is not all; they run up to seed, and exhaust the land. Notwithstanding the large produce of both hay and straw last year, the fodder is pretty well worked up, and had it not been so early a spring, many would have found it difficult to carry on their stock until the time to stint their pastures. This appears to be a good lambing season, the young bleaters being numerous, and

the weather being mild and moist, with plenty of food for the mother: they are doing well, with few losses. Horses of all kinds are selling well, at improved prices, good ones being very high. Young Pigs are scarcer.—April 22nd.

AGRICULTURAL INTELLIGENCE,
FAIRS, &c.

BEDFORD FAIR.—There was an unusually large supply of stock—in fact, the supply exceeded that of several years past. There was a good attendance of buyers, and a moderate amount of business was transacted. Good store beasts realized from £13 to £20 each.

BERWICK FORTNIGHTLY MARKET.—There was a large show of beasts, but business was slow. Mr. R. Thompson, Lowhaugh, sold a lot at £17 10s., and another lot at £25 10s.; Mr. Cairns, of Nuncliffe, sold a lot at £18 12s.; Mr. Cockburn, of Greenfield, sold a lot at £19; Mr. Mather, of Hornciffe, sold a lot at £26; Mr. Moor, of Longridge, sold a lot at £17; Mr. Robertson, Northam Boat House, sold a lot at £19; Mr. Tully, Barnmoor Riggs, sold a lot at £20; Mr. Mitchell, of Letham, sold a lot of queys at £13; Mr. Middlemiss, of Scremerston, sold a bull at £30, a cow at £20, and a lot of cattle at £23. In the sheep market there was a larger supply than at the previous market. Mr. Marshall, of New Farn, sold a lot at 44s.; and Mr. Mather, of Hornciffe, sold a very fine lot of hogs at 44s. There was not such a large supply of pigs as at last market, and the price ranged at from 5s. to 6s. per stone. Cows were selling at about the price of last market.

BOSTON SHEEP MARKET.—A very large show of sheep for Lincoln fair week. The mutton trade was dull, and last week's rates were not sustained. Hogs met a slow demand at from 34s. to 35s. a-head.

CAISTOR FORTNIGHTLY MARKET.—There was a large show of sheep. Very few fat sheep, and prices were unaltered. Ewes and lambs were bad to sell, at lower figures. The supply of beasts was also too large for the demand, and trade ruled heavy, at a reduction of about £1 a-head. Good fresh steers made £20, and in-calvers met a fair trade. Fat beasts were inquired for, but none were shown.

CARLISLE FAIR.—There was a large attendance of buyers, but they principally devoted their attention to good calving cows and beasts for grazing purposes, for which there was a good trade. The demand in other departments was dull. Good calving cows £14 to £20, geld cows £11 to £18 10s., three-year-old shorthorns £14 to £15 15s., Galloway bullocks £10 to £16, Irish heifers and bullocks £7 to £10 10s.; half-bred sheep 22s. to 33s. a-head.

CAWDOR TRYST.—Sellers held out for large prices, and, except for the best quality, of which there was only a limited number on sale, the market was throughout somewhat stiff. During the day numerous transactions took place at the quotations following: Cross queys at £8 8s., cross stots at £13 10s., ditto two-year-old at £13, two-year-old crosses at £14 5s., one-year-old polled queys at £10 10s., and two-year-old stots at £16 19s., crosses at £16 5s., lot of year-old cross stirks at £7 7s., and two polled three-year-old heifers in calf at £11 12s. 6d., a lot of two-year-old cross stots at £15 10s., six-quarter-old polled queys at £11, two-year-old cross stots at £12, and queys at £10, polled stots at £7, cross two-year-olds at £15 10s., cross two-year-olds at £12. Mr. Macarthur, Tomahogle, sold cross heifers at £12 10s., and a lot ditto stots at £12 7s. 6d.; year-old stots at £8 7s. 6d., cross queys at £17. In sheep little was done. Mr. Tolmie, Balsaparden, sold blackfaced ewes and lambs at 17s.

CHESTER FAIR.—The show of horses was not a large one, and well-bred animals were scarce. The better-class of cart-horses commanded from £40 to £50, and there were a few useful hacks and ponies, for which good prices were asked. At the Gorsestacks cattle found a ready sale; milkers £16 to £18, barrens £12 to £14. Of sheep there was but a poor quantity, and the quality was such as to find but little favour. Pigs were the turn higher, and were in demand.

CLEOBURY MORTIMER FAIR was well attended by buyers, and the following are the prices at which most of the sales were effected: Ewes and lambs, 40s. to 45s. per couple; mutton, out of the wool, 7d. to 7½d.; in the wool, 9d. per lb. Pigs were dearer.

DEVIZES FAIR.—The April fair for sheep is never very

extensive, and is pretty much confined to tegs, with a few couples, the supply of which was about an average. The depreciation in prices was fully 5s. a head, as compared with those which ruled this time last year. Best tegs may be quoted from 38s. to 42s., seconds from 30s. to 35s., couples (of which there was really nothing good on offer) from 30s. to 46s. The cattle fair was largely supplied with every description of stock, for which plenty of customers were found at full prices. Cows with calves made from £16 to £22, but some were sold at Rowde on the Saturday preceding as high as £25 and £26 each. Cattle for grazing also sold readily. Mr. W. Sainsbury, of West Lavington, showed two remarkably fine six-years-old oxen, for which he asked £35 each; and failing to obtain that price, sent them home again.

DONCASTER FORTNIGHTLY MARKET.—There was a splendid lot of both Beef and Mutton, and likewise a large attendance of butchers, dealers, and others. Some unusually fine Bullocks and Heifers commanded a good deal of attention, and fetched rather better prices—the Beef trade on the whole being rather better than for some time past. Prices ranged from 7s. 6d. to 8s. 9d. per stone. Sheep were a very numerous class, chiefly clipped ewes and hogs, but the trade was very slow, at quotations ranging from 5½d. to 6½d. per lb.

DUNFERMLINE FAIR.—There was a numerous supply of grazing and fat cattle and milch cows in the market. Best fat cattle sold at prices varying from £15 to £20 each, and secondary cattle from £9 to £14, being from 9s. 6d. to 10s. 6d. per Dutch stone. Two-year-old grazing cattle brought £8 to £13, and one-year-olds £3 to £8, averaging from 9s. 6d. to 10s. 6d. per Dutch stone. Milch cows sold from £8 to £16 each. At the sales a most extensive business was done. Fat sheep brought 35s. to 60s. each, being fully 9d. per lb. Grazing hogs brought 18s. to 32s. each, ewes and lambs 22s. to 25s. 6d.; a few remained unsold. Best fat cattle sold at £18 to £23 each, and secondary cattle at £10 to £18, being 9s. to 11s. per Dutch stone. Grazing cattle at £7 to £11 10s. each, and milch cows sold at £4 to £18.

FALKIRK TRYST.—At the second tryst the show of cattle, though considerably larger than at the corresponding tryst last year, and though in advance of the market last month, has not so far as quality was concerned been commensurate with the demand, nor was the class of stock sought after by parties from a distance suitably represented. Considerable disappointment in consequence occurred, and there were several intending buyers from Forfarshire and from other counties who returned home without getting a single animal. A finer and bulkier description of cattle than what were shown were required for by these gentlemen, and their almost total absence prevented them from doing any business. The stock shown consisted for the most part of Ayrshire cattle, Highlanders, and Irish stirks and calves. For the best lots of these there was a good steady demand, and prices of grazing stock were considered to be fully £1 a-head above the currencies of last year. Milch cows were also in better repute than they have been for some time, and prices were generally reported to be firmer than at recent markets. In the sheep department the show was neither so large nor so good as was anticipated. In this case also disappointment was experienced by some dealers who were expecting a good show, and there were a number who had come from a distance with considerable orders, but were unable to get them executed. Half-breds and crosses constituted the staple of the sheep fair, and they were all of a secondary and inferior class. Of those sold the prices were much the same as at House of Muir in the beginning of the month. The show of horses was small. There was a fair demand, and prices for draught animals ranged from £20 to £35.

GLOUCESTER MONTHLY MARKET.—The supply of Beef was good for the season, and the number of Beasts on offer was quite equal to the demand. Of Sheep there was a moderate show, of various quality. Wethers in the wool realized good prices. A clearance was made at the following rates: Beef from 7d. to 7½d., Sheep in the wool from 8d. to 8½d., shorn Sheep from 6½d. to 7½d. per lb.; Pigs were in great demand at from 10s. 6d. to 11s. per score.

LINCOLN FAIR has passed off with a smaller show of first-class horses than ever. Very little was doing, excepting in the stables, when we heard of the Messrs. Wimbush purchasing four very fine carriage horses of Mr. Little, of Bly-

borough, at 100 guineas each; Mr. Munday, of Wrawby, got £110 for a blood mare; Mr. Sharpe, of Baumber, had a prime lot of riding and driving horses, which sold from £70 to £180; Mr. Sanders, from Ireland, two hunters, which sold for 300g.; Mr. Wheeler, of Oxford, bought two hunters at £130 each; Mr. Hall (Yorks) made 100g. of a hunter; Mr. Brian, from Wales, refused £100 for a riding mare; Mr. Holland, of Donington, made £100 for a carriage horse; and Mr. Jacobs, of Watton, Norfolk, made £190 for two splendid carriage horses. Superior animals of all descriptions were in good demand at fully last year's rates, but moderate sorts were difficult of sale. A fair sprinkling of draught horses, for the most part useful animals, with a few noble ones, which made high figures. Mr. Paddison, of Ingleby, sold one for £70, and Mr. Walker, of Dunholme, one to Mr. Robinson, of Manchester, for a sum approaching that figure; Mr. Wilson, of Fulnetby, also made £70 of one. Heavy cart-horses of the best build were from £80 to £70. A good lot of useful Irish hacks, and also several droves of ponies "in the rough." The usual dealers were in attendance, amongst them being several German and French buyers. Mr. Shields had a large stud of useful animals, which he disposed of at from £30 to £60 each, and one pair to match sold for £90. The Messrs. Wimbush bought sixteen more riding and driving horses, varying from £75 to £160 each. A fair trade was done in horses for agricultural work, ranging from £35 to £40. The demand for good carriage horses has fallen off of late, pairs not being so fashionable now as formerly. The following may be taken as a summary of the fair's prices: Animals of good fashion for private carriages, and broken to single and double harness purposes, from £75 to £85; handsome and well-bred young horses, suitable for the above purpose, but unbroken, £70 to £85; neat stepping active ditto; for phaetons, &c., from £50 to £80; well-grown strong horses for omnibuses, cabs, &c., from £30 to £35; single harness horses and roadsters, from £20 to £30; useful cover hacks and cobs from £40 to £60, harness ditto and trotting cobs from £40 to £70, strong horses for brewers and London team work from £55 to £70, seasoned ditto for contractors and agricultural purposes from £35 to £45, three-year-old cart colts £18 to £35, nag colts £30 to £30; quick, sound, young horses, suitable for town vans, &c., from £35 to £50; animals of pedigree and known blood, adapted to the hunting field, from £100 to £150; Irish colts and unbroken animals up to £80. The sheep fair was expected to be the largest for several years past; the number penned was over 50,000, which is 5,000 over last year. Nearly all were in excellent condition; very few inferior pens. Trade was very slow for the first two or three hours, very few transfers taking place up to ten o'clock, prices asked being considered high, and purchasers holding back. The following sales were, however, effected by that time: Mr. Holmes, Nettleham, 140 hogs at 60s., and 80 shedders at 55s.; Mr. Gambles, Ashby, 150 at 57s.; Mr. Paddison, 100 at 58s.; Mr. Stevenson, Skellingthorpe, 94 at 55s.; Mr. Farrow, Burton, 70 at 50s.; Mr. Bills, Linwood, 150 at 55s.; Mr. Fox, Dunston, 200 at 54s.; Mr. Briggs, Potterhanworth, over 50 at 54s.; Messrs. Bayle, Riseholme, 220 at 58s. 6d., and 110 at 53s.; Mr. Fieldhead, Kirmond, 226 at 57s.; Mr. Biron, of Kirkby Green, over 50 at 56s.; Mr. Scholey, of Nocton, 80 at 58s.; Mr. Silverster, of Cherry Willingham, 230 at 54s.; Mr. Robert Graves, of Linwood, over 100 at 57s.; Mr. John Mackinder, Hackthorne, over 50 top hogs at 70s.; Mr. B. Wilson, Harleston, 80 at 50s.; Mr. Wilkinson, Skellingthorpe, 60 at 47s.; Mr. Howard, Owmby, 140 at 57s.; Mr. Gresham, Lincoln, 50 at 55s.; Mr. Gambles, Nocton, 260 at 56s.; Mr. T. Brook, Harleston, 50 at 63s.; Mr. Coney, Welton, 50 at 55s.; Mr. Betts, Cainby, 100 at 60s.; Mr. Mettiam, Fiskerton, 65 at 58s. 6d.; Mr. West, Dunholme Lodge, 200 at 59s.; Mr. Robinson, Saxby, a pen of culls at 57s.; Mrs. Moffatt, Dunholme, 50 at 60s.; Mr. Appleton, Nettleham, 100 at 64s.; Mr. Gilbert, Meiberingham, a pen of about 200 at 54s.; Mr. Middleton, Burton, 150 at 50s.; Messrs. Wilmot, Newton, 200 at 45s., and 150 at 48s.

SALISBURY FORTNIGHTLY MARKET.—There were over 100 animals of all sorts, and the best fully maintained late quotations. In the Sheep department about 900 were penned, and the demand ruled only moderately active, at previous figures. Oxen from 11s. 6d. to 13s. per score for the best, and heifers from 10s. 6d. to 11s. 6d. Mutton in the wool from 7d. to 8d. per lb. for best Downes.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

The month of April has been chequered in its character—opening for a week dry and sunny, then for a fortnight very cold with frosty nights, and closing with a more genial and growing temperature, though often so boisterous as to greatly damage the fruit trees, already harmed by recent severe frosts. The rain, however, was much wanted, both here and abroad, and apprehensions began to enter men's minds as to the future, which we trust are now dispelled, as not much injury has been sustained by the corn, either as respects wheat or other grain; but the expectation of an early harvest has much diminished by the late nipping winds. We have had a steady flow of imports, at the rate of about 800,000 qrs. per month since the 21st of March, and should our supplies keep on at this pace there will not be much fear of a pinch as respects quantity; still there has been a great falling off in English wheat and produce generally, and whatever be our imports when America is as open as Russia now is, we believe every bushel will either be required for immediate consumption, or become very precious for mixing with the new corn when it comes to hand. Should even plenty be gathered and our crops be well harvested we do not expect such a revulsion on prices as former times have seen, for there will be nothing to work with but the new crop, old stores being exhausted. As man's vision cannot cross over a coming day, it is useless to speculate on the future; but it would seem we shall not only want one, but at least two universally good crops, to recover our late position. It may be, indeed, our ingratitude deserves we should be empty-handed as well as reminded of our dependence, for "the earth is the Lord's and the fulness thereof;" but yet let us be hopeful and trustful as to the future, remembering that it is always wholly in His power. Prices have little altered since our last, but the tendency has been upwards, to the extent of fully 1s. per qr., notwithstanding the opposition of millers to any further advance. In France the markets continue to barden, so they do in Holland and Belgium, but Germany has been calm or rather easier, more especially for future delivery, and Danzig, where the quality is mostly inferior, has given way 1s. New York, with better supplies and an anticipation of their increase on the complete breaking-up of the frost, has rather yielded as to the value of flour and wheat. In Australia the crops have been favourably gathered, and a moderate export trade is expected; but present rates are high, say to 9s. per bush. for new wheat. The following prices were recently quoted at the places named: The best white wheat at Paris was worth 85s. 6d., red 82s.; white at Bordeaux, 83s. 6d.; Berdianski at Paris, 76s. 8d. (here worth barely 71s.); Wismar wheat at Antwerp, 76s. 8d.; native wheat at Brussels 78s. 9d., at Bruges 79s. 6d.; weak white Zealand

at Rotterdam, 76s. 6d.; the best red at Hambro' 72s. 6d., at Stettin 68s. 6d.; high-mixed at Danzig, 80s.; red at Cologne, 69s. 6d.; Banat and Theiss wheat at Pesth in Hungary, 54s.; the same wheat at Mayence, 69s. 6d.; spring red wheat at New York, 63s. 6d. per 480 lbs.

The first Monday in Mark Lane opened on small English arrivals of wheat, but the foreign supply was large. Very few fresh samples appeared in the Essex and Kentish stands, and there was more disposition to do business on the part of town millers, who however would pay nothing over the rates of the previous week. In immediate anticipation of the Easter Holidays, very little was passing in foreign, but former rates were fully maintained, especially for all good qualities. The floating trade, with but few arrivals, was very firm. It being Easter week, the country trade was very limited, yet in the little business done the prices were tending to hardness, and some few places noted 1s. per qr. advance, though here and there symptoms of dulness were manifested; and Sleaford and a few other towns noted a decline of 1s. per qr.; Edinburgh was 1s. dearer, but Glasgow noted no change. At Dublin there was an improved trade at fully the previous currency.

On the second Monday the supplies were very similar to those of the previous week—short as respects those of home-growth, though there was plenty of foreign. The show of fresh samples during the morning on the Essex and Kentish stands was very small, and some of it thin and poor. The few samples that were really fine were more readily placed at the previous rates, but inferior qualities remained dull. No liveliness was evinced in the demand for foreign, but holders were firm as to values, and the sales made were fully at the previous currency. With several cargoes fresh arrived off the coast, prices were well supported. Notwithstanding the influence of the holidays, the wheat trade in the country generally evinced great firmness. One shilling advance was noted at Ipswich, Bourne, Gloucester, Sleaford, Market Rasen, and some other places. Liverpool gained 2d. per cental on both its market-days, and the general aspect of the trade was buoyant and upwards. In Scotland there was only firmness, no change being noted either at Glasgow or Edinburgh. Belfast found a lively trade, at fully former rates; but Dublin was less active than during the previous week, though there was no reduction in prices.

On the third Monday the English supplies were further decreased, and there was not an equal supply from abroad. Kent and Essex exhibited very few samples on the several stands, and the few that were really of fine quality occasionally obtained 1s. advance, in spite of millers' reluctance to pay it. There was a much improved demand for foreign, and the previous rates were refused by

several factors in the confident belief that a rise was imminent; but these high demands checked business. A free sale was found for cargoes afloat, and really fine shipments were in some instances sold at more money. During the week the country markets, being but poorly supplied and cheered by the better accounts from London, exhibited more tone, and most of them noted a rise of 1s. per qr. Among them were Hull, Ipswich, Lynn, Gainsborough, Boston, Spalding, Rochester, Barnsley, and Wolverhampton; while Stockton-on-Tees, and Gloucester, noted a rise of 1s. to 2s., and Salisbury (apparently out of bounds) made a rise of 3s. to 4s. per qr., from the scarcity of samples and confidence of opinion; Liverpool, however, made no change on Tuesday or Friday. Glasgow was firm, but not dearer; Edinburgh was up 1s., and the Scotch markets generally were steady. Dublin noted no change in the value either of native or foreign samples.

On the fourth Monday there was again a short supply of English wheat, with plenty from abroad, though less than for several weeks. The show from Essex and Kent during the morning was very scanty. The best samples of white, from scarcity, occasionally brought an advance of 1s., but not inferior parcels, and business was far from brisk. Foreign was not active, but holders remained firm for all good qualities of white and red, there being little of the former in granary. Receipts from Dantzic this season have been very small, and likely to remain so, for the French are importing middling sorts at Dunkirk. Floating cargoes went off at 6d. to 1s. improvement for the week.

The imports into London for the four weeks noted were 13,698 qrs. English, 118,371 qrs. foreign, against 19,262 qrs. English, 55,187 qrs. foreign in 1867. The imports into the kingdom for four weeks, up to the 18th April, were 3,205,436 cwt. wheat, 263,454 cwt. flour. The London averages commenced at 72s. 1d., and closed at 75s. 10d.; the general averages commenced at 72s. 10d., and finished at 73s. 8d. per qr. The exports from London for four weeks were 5,565 qrs. wheat, 212 cwt. flour.

There has scarcely been any variation in the flour trade through the entire month. Town millers have not altered their top price, which has stood at 64s. per sack, while the six marks at Paris have been equal to about 60s. 4d. per sack. Norfolks have not been worth over 51s.; choice marks in proportion. The imports lately received are all to a losing account, whether in sacks or barrels. The receipts into London for four weeks were, in country sorts, 65,187 sacks; in foreign, 18,838 sacks 11,270 barrels; against 76,965 sacks country, 9,401 sacks 37 barrels foreign for the same period last year.

Maize, which seriously lost value in February and March, has not recovered, and there has been a further reduction of 1s.; but as the arrivals have only been moderate, and it is now relatively the cheapest grain on the market, we should not be surprised at some advance ere long; and should our wheat imports fall short, a smart rise would be sure to follow. Good yellow can be had at 41s.,

and white at 43s. per qr. The imports into London were 8,317 qrs., against 1,420 qrs. in 1866.

The arrivals of barley have been very scanty, with the exception of one foreign supply, in the first week. Prices, therefore, have gained about 1s. to 2s. per qr., both in malting sorts and all descriptions of foreign. This grain seems almost used up in this country, and it is much the same in Europe; so, notwithstanding its high price, and the close of the malting season, there seems little chance of its being cheaper till the new crop comes in. It is clear the last yield was over-estimated. The imports into London for four weeks were 5,659 qrs. British, 27,487 qrs. foreign, against 7,424 qrs. British, 28,391 qrs. foreign for the same period in 1867.

The malt trade has been very limited; but prices have rather hardened, as the consequence of the scarcity of barley. Stocks are but moderate.

There has been very little change in the value of oats. The English supplies have greatly fallen off, farmers having sent nearly all they had to spare; while Scotland and Ireland have sent nothing. France has offered better prices than England to Irish merchants, the full-bodied potato kinds being much liked in Paris. Fine corn has been most saleable, and heavy 40lbs. Swedish have brought 29s. per qr; but some light Dutch and Trieste sorts were not worth over 23s. per qr. This grain is very scarce in most foreign countries, and there is little prospect of its being lower till the new Russian supplies arrive. The imports into London for four weeks were 4,674 qrs. English, 15 qrs. Scotch, no Irish, 119,875 qrs. foreign, against 6,898 qrs. English, 203 qrs. Scotch, 3,460 qrs. Irish, 124,174 qrs. foreign in 1867. During the month London has exported 1,410 qrs.

The supply of beans being much reduced, prices have risen fully 2s. per qr., the growth in Egypt not as yet having been free enough to secure liberal shipments thence. The demand as summer comes on will be lessened, and the relatively lower price of maize will tend to prevent much increase of value; but there is always enough retail consumption to keep prices high when supplies are small. The imports into London for four weeks were 2,379 qrs. English, 3,238 qrs. foreign, against 4,189 qrs. English, 25 qrs. foreign last year.

Almost no home-grown peas have appeared in the London market, and the foreign supplies have become greatly reduced; while a moderate export trade for Swedish account has maintained the value of white boilers. Indeed, all sorts have gained fully 1s. per qr. during April. It would seem that farmers have used this grain for their own purposes: white sorts for some time having been relatively low, they are now held at 48s. per qr. The imports for four weeks into London were 222 qrs. English, 965 qrs. foreign, against 1,478 qrs. English, no foreign, in 1867. The London exports in the month were 1,630 qrs.

Better supplies of linseed having come to hand, and more being expected from Russia than of late, this grain has rather declined in value—say, 1s. to 2s. per qr.; but it has been relatively high for years, and if would be serviceable to farmers and graziers to see this article more within their reach.

Tares have cheapened down to feeding prices, and these being high, holders have not seriously lost money.

		Shillings per Quarter.	
WHEAT, Essex and Kent, white...	old 75	new 70	to 80
	red	73	77
Norfolk, Lincoln, " and Yorkshire, red			68
			75
BARLEY	36 to 38	Chester, new 89	48
Grinding	37	Distilling	37
MALT, Essex, Norfolk, and Suffolk 69		extra 70	75
Kingston, Ware, and town-made 69		" 70	75
Brown		" 70	54
RYE			43
OATS, English, feed 36 to 33		Potato	30
Scotch, feed	00	Potato	00
Irish, feed, white 33	26	Fine	28
Ditto, black	33	Potato	27
BEANS, Massagan	43	Ticks	43
Harrow	44	Pigeon	46
PEAS, white, boilers	48	Maple 46 to 48 Grey, new 45	64
FLOUR, per sack of 280lbs., Town, Households			60
Country, on shore	53 to 53	"	55
Norfolk and Suffolk, on shore			51

		Shillings per Quarter.	
WHEAT, Danialo, mixed 73	to 78.....old, extra	78 to 85
Königsberg 70	75.....extra	73 79
Rostock 72	78.....fine	77 78
Silesian, red 68	73.....white	73 76
Pomer., Meckberg., and Uckermarkred old	71	78
Russian, hard, 63 to 68.	St. Petersburg and Riga	65	70
Danish and Holstein, red	68 69.....	American	63 71
Chilian, white	74.....	Californian	77 .. Australian
BARLEY, grinding	35 to 37.....	distilling and malting	42 45
OATS, Dutch, brewing and Poland	24 to 33.....	feed 23	28
Danish and Swedish, feed	25 to 30.....	Stralund	25 30
Canada 23 to 28, Riga	27 to 29, Arch.	27 to 29, P'abg.	29 30
TARES, per qr.		40 44
BEANS, Friesland and Holstein		45 48
Königsberg 43	to 46.....Egyptian	43 44
PEAS, feeding and mangle	43	44.....fine boilers	44 47
INDIAN CORN, white 41	43.....yellow	40 42
FLOUR, per sack, French	53	58.....Spanish, p. sack	52 58
American, per bri. 30	34.....extra and d'ble	35 38

Wheat	88,958	qrs.	73s. 8d.
Barley	8,780	"	43s. 10d.
Oats	3,653	"	29s. 0d.

Years.	WHEAT.			BARLEY.			OATS.		
	Qrs.	s.	d.	Qrs.	s.	d.	Qrs.	s.	d.
1864...	74,164	40	1	25,652	30	10	8,069	19	3
1865...	82,003	39	7	19,049	30	0	3,145	22	7
1866...	73,215	44	9	14,817	37	2	3,455	24	8
1867...	54,045	61	4	11,068	39	8	4,318	25	5
1868...	58,958	73	8	8,790	43	10	3,653	29	0

Wheat	2530 qrs.	75s. 10d.
Barley	20 "	46s. 0d.
Oats	1 "	00g. 0d.

FOR THE LAST SIX WEEKS:		Wheat.	Barley.	Oats.
		s. d.	s. d.	s. d.
March 14, 1898	73	1	43	3
March 31, 1898	72	5	43	4
March 28, 1898	72	10	43	3
April 4, 1898	72	6	43	4
April 11, 1898	72	2	43	6
April 18, 1898	73	8	43	10
Aggregate of the above	72	11	43	5
The same week in 1897	61	4	39	8

PRICE.	Mar. 14.	Mar. 31.	Mar. 28.	April 4.	April 11.	April 18.
73s. 6d.	
73s. 3d.		
73s. 1d.			
72s. 10d.	
72s. 6d.		
72s. 5d.

MUSTARD, per bush., brown 18s. to 15s. white	8s. to 10s.
CANARY, per qr.....	64s. 70s.
CLOVERSEED, red.....	68s. 65s.
CORIANDELS, per cwt.....	30s. 31s.
TARES, winter, new, per bushel.....	6s. 6s. 6d.
TRIFOIL.....	21s. 22s.
RYEGRASS, per qr.....	18s. 30s.
LINSEED, per qr., sowing 70s. to 72s., crushing	62s. 67s.
LINSEED CAKES, per ton.....	211 10s. to 211 15s.
RAPSEED, per qr.....	80s. 64s.
RAPE CAKE, per ton.....	26 0s. to 26 10s.

CORIANDBER, per cwt.....	21s. to 22s.
CARAWAY "	43s. 44s.
CLOVESBRED, red 44s. to 50s., white.....	68s. 88s.
TEHPOL "	16s. 18s.
RYEBRASS, per qr.....	17s. 18s.
HAMPSTER, small 38s. per qr, Dutch.....	40s. 43s.
LEINSEED, per qr., Baltic 58s. to 62s., Bombay.....	65s. 66s.
LEINSEED CAKES, per ton.....	210 5s. to 211 15s.
RAPESEED, Dutch.....	60s. 61s.
RAPE CAKES, per ton.....	25 10s. to 26 0s.

BOROUGH, MONDAY, April 27.—Our market has been steady during the past week, with rather more business doing, and prices of every class of home-growth rule very firm. Fine Bavarians and Belgians are a shade dearer, imports having almost ceased.

Mid and East Kent	£5 5	6 15	7 15
Weald of Kents	4 10	5 5	6 6
Sussex	4 10	5 5	5 10
Farnham and country	7 0	7 15	8 8
Yearlings	3 10	4 0	4 10

LONDON, Monday, April 27.—During the past week the arrivals have not been so large, but owing to the continued mild growing weather the consumption has very much decreased, and all stale or second-rate potatoes are a drug upon the market. The following are this day's quotations:

Yorkshire Flukes.....	180s. to 160s. per ton.
Ditto Regents.....	120s. to 140s. "
Ditto Rocks.....	100s. to 110s. "
Lincolnshire Regents.....	110s. to 130s. "
Dunbar and East Lothian Regents...	120s. to 140s. "
Perth, Forfar, and Fife Regents.....	110s. to 130s. "
Ditto Rocks.....	89s. to 100s. "
French and Belgian whites.....	70s. to 80s. "

LONDON, MONDAY, April 27.—The supplies coming forward have been fairly extensive, and quite equal to the demand. On the whole the trade is steady, at the annexed rates. Last week's importations into London consisted of 88 packages from Boulogne, 414 tons and 745 sacks Dunkirk, 83 boxes Gibraltar, 95 packages Hamburg, 98 Nantes, 1 Rotterdam, and 20 half-boxes from St. Michaels.

Regents	120s. to 160s.	per ton
Flukes	130s. to 160s.	"
Rocks	100s. to 120s.	"
French	70s. to 85s.	"

COUNTRY POTATO MARKETS.—**MANCHESTER** (Saturday last): Potatoes, 12s. to 20s. per 252lbs. **DONCASTER** (Saturday last): Our market was well supplied with most descriptions of potatoes this morning. Trade, however, ruled slow, and not much business was done. Regents were making about the same money as last week—12s. to 14s. per load; flukes ranged from 14s. to 15s. per load, and rocks were making quite 1s. per load less money than when last quoted, from 10s. to 11s. **YORK** (Saturday last): The supplies to this market are well maintained, and are on an extensive scale. Flukes fetched from 16s. to 17s. per tub of 280lbs., and 1s. 3d. per peck retail. Regents from 15s. to 16s. per tub, and 1s. 2d. per peck; and potatoes for seed 10s. to 12s. per tub.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—s.	s.	CHEESE, per cwt.—s.	s.
Friesland.....	118 to 122	Cheshire.....	56 to 74
Jersey.....	90 to 108	Chle. Gloucester.....	56 to 66
Dorset.....	128 to 132	Cheddar.....	66 to 76
Carlisle.....	—	American.....	48 to 58
Waterford.....	—	HAMS: York.....	90 to 96
Cork.....	—	Cumberland.....	80 to 86
Limerick.....	—	Irish, new.....	80 to 84
Sligo.....	—	BACON:—	
Fries, per doz., 12s. 0d. to 14s. 6d.		Wiltshire.....	76 to 80
		Irish, green.....	70 to 74

CARMARTHEN BUTTER MARKET, (Saturday last).—The market opened for new spring butter on the 18th inst., with a bare supply, and at a high valuation—15d. to 16d. per lb. for all of fine quality. In consequence of seasonable rains and most favourable weather for the growth of our pastures, we have the market down to-day full 3d. per lb., and it is expected the price will continue to droop for some weeks to come, as the supplies become more abundant.

CORK BUTTER EXCHANGE, (Friday last).—Ordinary: first quality 129s. to 120s., second quality 129s. to 120s., third quality 119s. to 116s., fourth quality 114s. to 111s., fifth quality 96s. to 93s., sixth quality 60s. to 57s. Mild-cured first quality 131s. to 128s., second quality 131s. to 128s., third quality 119s. to 116s. Repacked and dairies, 3rd, 4th, 5th, and 6th of kegs 4s. per cwt. less. Currency—ordinary butter 10s. per cwt. less, mild-cured 10s. ditto, sponged butter 2s. ditto.

CHESTER CHEESE FAIR.—Upwards of 90 tons of cheese were pitched, showing an advance upon the corresponding quantity of last year. The prices ranged from 40s. to 60s. or 65s. per cwt., and one or two fine dairies commanded 72s. or 74s. per cwt. The bulk of cheese sold realized from 50s. to 55s., and as a whole was of better quality than that at previous fairs. Sales at first were reported slow, but as the morning advanced more business was done, and most of the cheese was sold.

GLASGOW, (Wednesday last).—A fair supply coming forward for the season, 1,242 cheese having been laid down. A quiet steady business doing; sales 24 stoncs. New Cheddars 49s. to 57s., new Dunlops 48s. to 55s.

POULTRY MARKETS.—Goshings 7s. to 9s., Pigeons 9d. to 1s., Woodpigeons 10d. each. Surrey Fowls 12s. to 15s., ditto Chickens 7s. to 10s., Barndoor Fowls 6s. to 8s., Ducks 4s. to 6s. per couple. English Eggs 7s. 6d., French 6s. per 100.

HAY MARKETS.

LONDON, SATURDAY, April 25.

SMITHFIELD.—A moderate demand.

CUMBERLAND.—Trade inactive.

WHITECHAPEL.—A fair supply.

	Smithfield.	Cumberland.	Whitechapel.
	s. d.	s. d.	s. d.
MRADLOW HAY, ...	55 0	57 6	56 0
CLOVER	70 0	100 0	70 0
STRAW	30 0	36 0	30 0

BIRMINGHAM, MONDAY, April 20.—The Hay and Straw market had a firmer tone, but without change in prices. Best Hay, £4 10s. to £4 15s.; Straw, £2 17s. 6d. to £3 6s. per ton. There was a fair supply of Hay and Straw at the wharf, which met with a good sale at last week's prices. Best Hay, £1 5s. to £4 10s.; Straw, £2 17s. 6d. to £3 per ton.

BRISTOL, FRIDAY, April 24.—Hay 70s. to 82s. 6d.; per ton. Straw 2s. 6d. to 2s. 8d. per doz.

WORCESTER, TUESDAY, April 21.—Hay, new 65s. to 76s., old 60s. to 90s. Straw, 45s. to 60s.

COVENT GARDEN MARKET.

FRUIT.

	s. d.	s. d.	s. d.
Apples, ½ bushel.....	0 0 to 12 0	Melons, foreign each	0 0 to 0 0
Chestnuts, ½ bushel.....	0 0 to 0 0	Nectarines, ½ doz.	0 0 to 0 0
Ob nuts, per lb.....	0 0 to 1 0	Oranges, new, ½ doz.	3 0 to 4 0
Curants, per ½ sieve	0 0 to 0 0	Peaches, ½ dozen	0 0 to 0 0
Figs, ½ dozen.....	0 0 to 0 0	Pears, ½ dozen	0 0 to 0 0
Filberts, per lb.....	1 0 to 0 0	Pine Apples, per lb.	0 0 to 12 0
Gooseberries, ½ qrt.	0 0 to 0 0	Plums, per ½ sieve	0 0 to 0 0
Grapes, ½ lb.....	10 0 to 15 0	Strawberries, ½ lb.	0 0 to 10 0
Lemons, ½ 100.....	0 0 to 15 0	Walnuts, ½ bushel	10 0 to 12 0

VEGETABLES.

	s. d.	s. d.	s. d.
Artichokes, per dozen	0 0 to 3 0	Mushrooms, ½ peck	1 0 to 1 6
Asparagus, ½ bundle	4 0 to 8 0	Must. & Green, ½ pun.	0 0 to 0 0
Beans, Kid, ½ 100.....	1 0 to 2 0	Onions, ½ bushel	2 0 to 5 0
Beet, per dozen.....	1 0 to 2 0	Pickling, per quart	0 0 to 0 0
Broccoli, per bundle.....	0 0 to 0 0	Paraleys, per bunch	0 0 to 0 0
Cabbages, per dozen.....	0 0 to 1 0	Paranips, per dozen	0 0 to 0 0
Carrots, per bunch.....	0 0 to 0 0	Pears, per peck	0 0 to 0 0
New, per bunch.....	2 0 to 3 0	Potatoes, York Re-	
Caniflowers, per doz.	0 0 to 0 0	gents, per ton	150 0 to 160 0
Celery, per bundle.....	1 0 to 1 8	Roots, per ton	100 0 to 120 0
Coumbers, each.....	0 0 to 1 3	Flukes, per ton	120 0 to 130 0
Endive, per score.....	1 0 to 2 0	Other sorts, per ton	0 0 to 0 0
Garlic & Shallots, ½ lb.	0 0 to 0 0	Kidneys, per cwt.	0 0 to 0 0
Herbs, per bunch.....	2 0 to 3 0	Radishes, per 15 bund.	0 0 to 0 0
Horseradish, ½ bundle	2 0 to 5 0	Sea Kale, per punnet	1 0 to 1 6
Leeks, per bunch.....	0 0 to 0 0	Squashes, per bushel	2 0 to 3 0
Leeks, per bunch.....	0 0 to 0 0	Tomatoes, per dozen	0 0 to 0 0
Mint, per bunch.....	0 0 to 0 0	Turnips, per bunch	0 0 to 0 0

ENGLISH WOOL MARKET.

CITY, MONDAY, April 27.—The demand for English-made has scarcely been so active as last week, owing to the slight reaction in the trade of the manufacturing districts; nevertheless, the late advance in prices is fairly maintained. For export, there is very little doing.

BRADFORD WOOL MARKET, (Thursday last).—The past week has been a quiet one in the wool trade. Consumers have all supplied themselves so abundantly of late that they deem it prudent now only to provide for their current want. Prices are, however, but slightly, if at all, affected by this state of things, and the cotton report this morning helped to establish confidence in existing rates. All good wools, especially Lincoln and North hogs and wethers, are fully as dear as ever; and for inferior sorts there is no perceptible change.—*Bradford Observer.*

GLASGOW WOOL SALES, (Saturday last).—We have had a quiet week in this market. The transactions have been very limited; still inquiries have been made for Highland wool, both laid and white, and as only a very few clips of these now remain, which may be classed as very superior, they are held at full market rates. Trade still continues to improve, and spinners are fully employed, several with fresh orders of considerable extent.—*P. H. McLeod.*

LEEDS (ENGLISH AND FOREIGN) WOOL MARKET, (Friday last).—There has been much less disposition shown by the manufacturers to buy English wool this week, and there is the promise of an early and large clip, they seem inclined to work up old stocks as much as practicable. Prices have not undergone any alteration. There is a fair consumption of colonial and other foreign clothing wools, and prices are unaltered. The next public sales, which will be on the 7th or 14th of May, will probably be the largest ever known.

PRICE CURRENT OF GUANO, &c.

Peruvian Guano direct from the Importers' stores, £12 5s. to £15 5s. per ton.	
Bones, £8 to £8 5s. Ditto Crushed, £6 10s. per ton.	
Animal Charcoal (70 per cent. Phosphate) £5 per ton.	
Coprolites, Cambridge, whole £5, ground £3 10s. per ton.	
Nitrate of Soda, 2½ 10s. to £14 10s. per ton.	
Gypsum, £1 10s. Superphosphates of Lime, £5 5s. to £6 5s. per ton.	
Sulphuric Acid, concentrated 1845 1d. per lb., brown 17½ 0d.	
Blood Manure, £5 5s. to £7 10s. Dissolved Bones, £5 15s. per ton.	
Lined Cakes, best American 2½, £11 10s. to £13 5s., bag 11 to £12.	
Cotton Seed Cake, £2 15s. to £7 10s. per ton.	

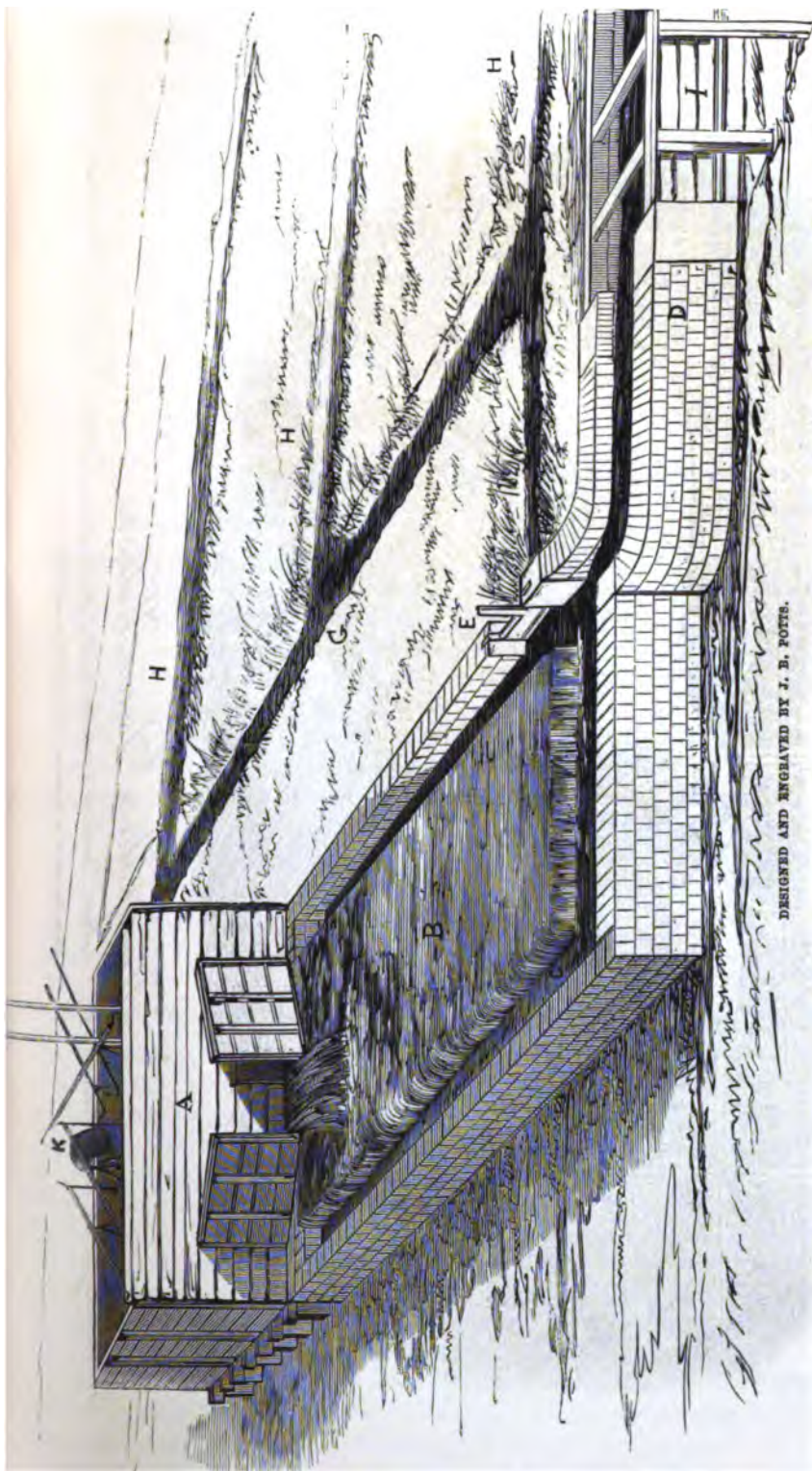
E. FURZE, London Manure Company,
116, Fenchurch Street, E.C.

Guano, Peruvian £12 7 6 to £15 0 0	Lined Cakes, per ton	£10 0 0	£11 0 0
Do. Upper do. 7 0 0	Amer. thin, bag £10 10 0	£11 0 0	£11 0 0
Bone Ash, 15 0 0	0 0 0	English 1 0 0	1 10 0
Nitr. of Soda, p. ct. 0 13 9	0 14 0	Coted Cakes, decort. 7 15 0	0 0 0
Lined Bomby, p. q. r. 3 4 0	3 4 0	Niger 2 10 0	0 0 0
Manure, Guzerat 2 16 0	2 19 0	Brimstone, 3d 3rd 0 5 0	0 0 0
Gloverseed, W.A.M.	2 10 0	Tallow, 1st P.T.C. 5 5 0	2 0 0
red, new per cwt. 2 7 6	2 10 0	super. Nitr. 5 5 0	2 0 0
SAMUEL DOWNES AND CO., General Brokers, No. 7, The Albany, Liverpool.			

SAMUEL DOWNES and CO., General Brokers,
No. 7, The Albany, Liverpool.

Agricultural Chemical Works, Stowmarket, Suffolk	
Prentice's Cereal Manure for Corn Crops	per ton £8 0 0
Prentice's Manure	" 8 0 0
Prentice's Turpentine	" 6 10 0
Prentice's Superphosphate of Lime	" 6 0 0

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DESIGNED AND ENGRAVED BY J. B. POTT.

T H E S E W A G E T A N K , A T T H E L O D G E F A R M , B A R K I N G .

A Tank into which the sewage is forced through an iron pipe, K, from northern outfall. B Receptacle in which all solid matter settles. C Reservoir into which sewage flows from B. D Channel to conduct sewage into wooden trough, I, from thence to any part of the Farm. E Slider, when lifted, allows the sewage to run into main cutting, G, and cross cutting, H, H, H.

PLATE V.
HAMPSHIRE DOWN WETHERS.

THE PROPERTY OF MR. W. B. CANNING, OF ELSTON, DEVIZES.

The Hampshire Downs have been showing very well of late, and these wethers were at all points one of the best pens of sheep exhibited at the last Smithfield Club Meeting. Mr. Canning's flock has indeed fairly earned the title of "*Improved*;" and his sort has been deservedly appreciated alike in the market and the show-ring. During the last few years the Elston sheep have taken ten of the Royal Agricultural Society's premiums, six of which were first, with ten from the Smithfield Club, in the like proportions of first and second.

Mr. Canning was also a winner at the Salisbury Meeting of the Bath and West of England, the only occasion of his entering the ranks of that Society, while he has of course taken from time to time any number of local premiums.

This deservedly famous flock of Improved Hampshire Downs will be sold at Elston in August: the rams and ram-lambs on the 7th and the ewes and lambs on the 19th. There will be in all nearly two thousand sheep offered, and, as already declared, distinctly without reserve.

PLATE VI.

THE SEWAGE TANK, AT THE LODGE FARM, BARKING.

These works have been some time in progress at Barking Creek, for the conveyance of the sewage of London from the northern outfall through Essex, and eventually to the Maplin Sands; but they are now at a standstill. Still a portion of the sewage has been for some time past forced by means of a stationary engine at the northern outfall through an iron pipe on to Lodge Farm, where it is used on the land. This sewage-matter is received in a tank on the highest ground on the farm, containing a series of measuring boxes, and then runs into a brick-built receptacle, where it is supposed the solid matter will settle, and the liquid-sewage flowing over the edges of

this receptacle falls into an outer reservoir, and from thence can be carried either by cut drains or by a wooden trough to all parts of the farm and adjoining land. The sewage can be kept back by the slider, on lifting which it flows into the main cutting, and into smaller cuttings which divide the land into plots. By stopping this flow of sewage with a spade or any suitable tool, it runs over the edge of the cutting, and flows all over the plot or plots to be irrigated, the surplus finding its way to another cutting at a lower level. Thus it may be used until it runs out at the lowest part of the farm as clear water, apparently free from all foul matter.

PHOSPHATE OF LIME.

BY CUTHBERT W. JOHNSON, F.R.S.

"Science and practice" is the motto of the Royal Agricultural Society. The men who a quarter of a century since founded the greatest of all agricultural societies had the sagacity to conclude that the man of science and the agriculturist must travel hand in hand—that together they would ever be following a far more rapid onward course than by any divided efforts. A valuable paper by Professor Voelcker, in the last half-volume of the Society's *Journal*, well supports these conclusions. It is entitled "Upon the Solubility of Phosphatic Materials."

A retrospective glance at the history of phosphate of lime reminds us of more than one interesting and useful fact. A century since, this now valuable salt was unknown. It was first pointed out in the year 1774, by Scheele and Gahn, two celebrated German chemists. It was then made known as the base of bones, was employed as it still is, to prepare phosphorus, and in the manufacture of china, to which it imparts the semi-transparency.

It is a little curious that in 1775 (the year after phosphate of lime was discovered), we have the first notice of its use in bones as a fertilizer. Some years have now elapsed since the Doncaster Agricultural Society made a valuable report on the use of bones as a manure. And hence we learn that in the year 1775, Colonel St. Leger, who then resided at Warmsworth, applied a quantity of them to his grass lands. These were the very slightly broken bones which accumulated around his fox-hound kennels, and by being applied in an almost unbroken state, these were not nearly so productive of fertility as in after-days, when the advantage of previously crushing them was ascertained.

As the chemists who discovered phosphate of lime determined it to be unaltered by exposure to the atmosphere, and insoluble in water, the agriculturists of the last century were led to conclude that it was the grease in the bones that rendered them useful as a manure. But, then, it was found that when all the grease was previously removed from the bones by boiling them, their fertilizing properties were as great as before. And, moreover, further chemical investigations demonstrated that phosphate of lime is found in almost all our cultivated plants; that these plants by long continued cropping gradually exhaust the soil of the salt, and that those lands which are the most deficient in the phosphate are precisely those which are the most benefited by the application of crushed bones. When phosphate of lime was found so invariably in the ashes of almost all our cultivated crops, it became an interesting inquiry to discover the proportions in which it existed in our plants. This question was very laboriously determined by Messrs. Way and Ogston (*Journal Roy. Ag. Soc.*, vol. vii. to vol. ii.). The following table will furnish the reader with the amount of phosphoric acid in 100 parts of the ash of each plant as determined by these chemists. (Phosphate of lime is composed of about 100 parts phosphoric acid and 79 lime).

Wheat seed, Hopetoun.....	44.44
Ditto straw and chaff	7.05
Barley seed, Chevalier	28.53
Ditto straw	7.20
Oats, seed	21.53
Ditto chaff	6.26
Ditto straw	22.69
Rye, seed	39.92
Peas, seed, common white	28.85
Ditto straw do.	1.23
Beans, seed, common field	28.72
Ditto straw do	0.49
Indian corn seeds, Keene's	53.69
Rapeseed, nitrogen, 4.21; oil, 37.84 ..	32.70
Linseed, nitrogen, 4.35; oil, 34.76.....	38.54
Ditto cake, oil 13.52	—
Hay, red clover.....	6.88
Ditto white clover.....	12.12
Hops, flowers, Farnham	14.47
Turnips, bulb, Skirving's	12.51
Ditto tops, do. do.....	6.54
Ditto bulbs, green tops, white	7.65
Ditto top, do. do.	3.15
Mangel wurzel, root, yellow globe	4.49
Ditto tops, do. do.	5.89
Ditto root, long red	3.11
Ditto tops, do. do	4.39
Kohl rabi, bulbs	13.46
Ditto leaves	9.43
Carrot, root, white Belgian	8.37
Ditto top, do. do.	2.55
Ditto root, common red	12.31
Ditto leaves, do. do.	6.21
Ditto seed do. do.	13.33
Potatoes in bloom, tuber	15.10
Ditto do. haulm.....	6.63
Jerusalem artichoke, tuber	16.99
Sainfoin grass in flower	9.55
Italian ryegrass in flower.....	6.34
Gorse, green	8.78
Flax, straw, coarse	8.48

NATURAL GRASSES.

Meadow fox-tail grass	6.25
Sweet-scented vernal grass	10.09
Downy oat grass	10.83
Upright brome	7.53
Soft brome	9.62
Crested dog's tail	7.24
Cock's foot.....	8.60
Seeds ripe	6.41
Hard fescue	12.07
Meadow soft	8.02
Perennial darnel or ryegrass.....	8.73
Annual meadow	9.11
Smooth-stalked meadow grass.....	10.08
Rough-stalked meadow	9.13
Common cat's tail or Timothy	11.39
Annual ryegrass	10.07

ARTIFICIAL GRASSES.

Common red clover	6.71
Purple trefoil	8.46
Cow grass	5.41
Common vetch	10.59
Alsike clover.....	5.64
Ribwort.....	7.08
Salad burnit	7.81
Yarrow	7.13
Lucerne	5.96

It being evident, then, from the continued presence of this salt in our cultivated plants, that it is an essential ingredient in their composition, the question naturally enough suggested itself as to how the plant absorbed

For, as vegetables cannot absorb solid the chemist had concluded that phosphate was insoluble in water, the phenomenon did of a reasonable explanation. It was that probably led Liebig to be the employment of superphosphate of water as a fertilizer in preference to its bones. When this great achievement, in 1840, his "Organic that valuable work, p. 184: with 40lbs. of bone-dust is of wheat, clover, potatoes; but the *forms* in bones does not appear to be a finely the bones are intimately they are easily are they assimilated, a practical mode of effecting over the bones, in the state of their weight of sulphuric acid, dissolved in four or five parts of water. Experiments on a soil formed from grauwacke, for the purpose of ascertaining the action of manure thus prepared, have distinctly shown that neither corn nor kitchen-garden plants suffer injurious effects in consequence, but that, on the contrary, they thrive with much more vigour."

Such was the origin of the use in our islands of superphosphate of lime. The first of our experiments, according to the late Professor Johnston (*Trans. High. Soc.*, 845, p. 92), with dissolved bones were made in 1841 by Mr. Fleming, of Barrochan. It appears that he dissolved them in muriatic acid, and applied them to mosses with considerable benefit.

But still the question remained unanswered as to the mode in which the plant absorbed the phosphate of lime as it exists in bones, if it is insoluble in water. It is his considerable question that Professor Voelcker has lately pretty clearly determined. He tells us at the commencement of his valuable paper, truly enough (*J.R.A.S.*, vol. iv., p. 176,) that "the comparative efficacy of bones, superphosphate of lime, coprolites, and other purely phosphatic materials, depends in a great measure on the facility with which they pass into the watery liquids present in cultivated soils from which plants derive their nourishment."

"Coprolites, apatite, rock-guano, and other varieties of mineral phosphates scarcely produce a visible effect upon vegetation, even when they are applied to the land as a finely-powdered condition and in large quantities, because they are not readily soluble in water, and consequently cannot be assimilated by our crops in quantities sufficient to promote a luxuriant growth."

"In order to render mineral phosphates more useful, the manufacturing chemist, as is well known, dissolves them in sulphuric acid, or, in other words, converts them into superphosphates."

"Experience has not only proved this to be an economical way of utilizing mineral phosphates for agricultural purposes, but has likewise shown it to be the only available means of converting the inactive phosphatic minerals into powerful artificial manures. If it be an admitted fact that such materials in a state of fine powder are of little practical utility to the farmer, it follows that manure-manufacturers should render phosphatic minerals as completely soluble as possible by chemical treatment with acid. It may, however, be questioned whether this proceeding is equally well adapted or equally necessary for converting bone-dust, boiled bones, ivory-dust, and such-like materials, into efficacious artificial manures."

"It is found that in porous soils, even half-inch bones

are sufficiently soluble to yield abundances of phosphatic food to the turnip crop, in accordance with the practice of many good farmers. It is, moreover, well known that the intimate admixture of phosphate of lime with decomposing organic matters favours the solution of the phosphate, and likewise that phosphate of lime is more soluble in the presence of ammoniacal salts than it is in pure water."

"The various conditions which affect the solubility of phosphate of lime in water, therefore, have a direct practical bearing on the application of bone manures in agriculture."

"I purpose, therefore, giving a brief account of an experimental inquiry having for its object to determine the extent to which various phosphatic materials are soluble in water and in some saline solutions."

From the following experiments it will appear that phosphate of lime is soluble to a limited extent in water, and still more so when the water contains one of the salts of ammonia.

The Professor then gives the analysis of pure bone-ash, obtained from the shank-bone of a horse. The following is the result of his examination:

Phosphoric acid (equal to tribasic phosphate of lime—bone-earth—87.29) ...	40.39
Lime ...	55.01
Magnesia ...	.84
Potash ...	.85
Soda ...	.08
Carbonic acid ...	3.99
Sulphuric acid ...	traces
Chlorine ...	traces

99.41

The Professor next determined the amount of phosphate of lime in grains, dissolved by one gallon of distilled water from the following materials, being the mean of two or more experiments:

Pure bone-ash (from a very hard bone) ...	1.18
Commercial sample of American bone-ash ...	1.88
Peruvian guano ...	2.52
Kooria-mooria guano ...	1.32
Sombrero phosphate ...	.84
Monks' Island phosphate ...	1.00
Suffolk coprolites ...	.64
Cambridge coprolites ...	.80
Estramadura phosphorite ...	.10
Norwegian apatite ...	.44

"It will be seen," adds the Professor, "that the earthy phosphates in Peruvian guano are more soluble in water than the phosphates in bone-ash; these in their turn dissolve more readily than the phosphates in hard rock guano or in coprolites. Indeed all the harder and crystallized minerals in the preceding experiments yielded considerably less phosphate of lime to water than the more porous and amorphous materials."

"Some of the preceding phosphatic substances were next shaken with solutions containing separately 1 per cent. of chloride of ammonium, 1 per cent. of carbonate of ammonia, 1 per cent. of common salt, and 1 per cent. of nitrate of soda; and the following results obtained."

Amount of phosphate of lime dissolved by one gallon of water containing 1 per cent. of chloride of ammonia (sal-ammoniac):

Pure bone-ash, yielding to distilled water 1.20 grains of phosphate of lime per gal ...	3.12
Commercial bone-ash, yielding to distilled water 1.76 grains of phosphate of lime per gallon (after three days' contact with water) ...	.96
Ditto (after twelve days) ...	3.76
Cambridge coprolites, yielding to distilled water .56 grains of phosphate per gallon ...	1.52
Suffolk coprolites, yielding .56 grains of phosphate per gallon to distilled water ...	1.12

Amount of phosphate of lime dissolved by water containing
1 per cent. of carbonate of ammonia :

Suffolk coprolites	...	...	1.72
Cambridge coprolites	...	...	1.60

"In all the preceding experiments the presence of ammoniacal salts increased the solubility of the phosphate of lime in the substances employed.

"Solutions of nitrate of soda and of common salt of various degrees of strength left in contact with finely-ground phosphatic minerals for a week or longer, dissolved no more phosphate of lime than distilled water did."

The whole paper of the Professor abounds with matter which will well repay the agriculturist for the most careful study. His summary at the conclusion of the essay will give my readers some idea of the interesting nature of its facts :

"1. Pure and dried phosphate of lime is sparingly soluble in water.

"2. In a moist state and the voluminous condition in which it is obtained by precipitation from its solution, it is about four times as soluble in water as it is after it has been dried and heated.

"3. Ammoniacal salts added to water materially increase the solubility of pure phosphate of lime, and of the phosphates in bone-ash, coprolites, and other phosphatic minerals.

"4. Nitrate of soda and common salt neither increase nor diminish the solubility of phosphates in water.

"5. Bone-ash is not sufficiently soluble in water to be used with advantage by itself or mixed with other fertilizing matters as a manure.

"6. The earthy phosphates in Peruvian and phosphatic guanos, still containing a good deal of organic matter or salts of ammonia, are sufficiently soluble in water to be readily appropriated by plants.

"7. The phosphates contained in coprolites, apatite, Sombrero rock, Spanish phosphate, and other phosphatic minerals, especially when they are hard and crystalline, are very little acted upon by water.

"8. For agricultural purposes, phosphatic minerals, as well as bone-ash, should be treated with a quantity of sulphuric acid sufficient to convert the whole of the insoluble phosphates therein contained as completely as possible into soluble combinations. It is waste of good raw material to leave much of the insoluble phosphates unacted upon by acid.

"9. Insoluble phosphates present in super-phosphate, or similar artificial manure, have little or no practical value to the farmer.

"10. The different kinds of bone-dust vary much in their solubility and practical efficacy as manures.

"11. Bone-dust made from solid bones, even when reduced to a fine powder, is less soluble in water and acts more slowly on vegetation than much coarser bone-dust made from porous or spongy bones.

"12. Fresh bones impregnated with grease do not readily enter into decomposition, and are less valuable as a manure than bones from which most of the fat has been removed by boiling in an open copper.

"13. Fat or bone-grease has no fertilizing value whatever, and as it retards the solution of bone-dust in water, it is decidedly an objectionable constituent of fresh bones, as far as the agriculturist is concerned.

"14. Water dissolves much more phosphate of lime from rotten than from fresh bones.

"15. During the putrefaction of bones, soluble nitrogenous organic compounds and ammoniacal salts are produced from the gelatine contained in bones. These compounds act powerfully and quickly as fertilizing constituents, and are indirectly useful in greatly enhancing the solubility of bone-phosphates in water.

"16. Bone-dust kept in a heap for a period of three or four months, heats and becomes more efficacious as a manure than bone-dust applied to the land fresh from the mill.

"17. Ivory-dust (or bone-shavings) is frequently adulterated with gypsum, fine sand, or vegetable ivory, but when genuine is the best form in which bone can be used for the production of home-made super-phosphate.

"18. High-pressure steam renders bones so brittle that they can be readily ground into a fine powder, which is readily assimilated by plants.

"19. Bone-meal prepared by high-pressure steam, contains not much less nitrogen than ordinary bone-dust, and as a manure is far more efficacious and valuable than the latter.

"20. Placed in a heap with ashes or sand, and occasionally moistened with liquid manure or water, bone enters into putrefaction, and becomes a much more soluble and energetic manure than ordinary bone-dust.

"An excellent way of rendering bone-dust soluble : may also be mentioned, is the Norfolk plan of putting it in alternate layers between fresh farmyard-manure, and letting both ferment together in a conical heap, covered up with earth to prevent the loss of any fertilizing matter, and to secure it from penetration by heavy rains."

By this process, which was suggested, in 1847, by the late Phillip Pusey (*Jour. Roy. Ag. Soc.*, vol. viii, p. 417; vol. x., p. 531), the usual amount of bones applied is very considerably reduced, and their solubility greatly increased. As Mr. Pusey observed, "The chief object of these experiments (made on the stone brash) was to try the effect of crushed bones, fermented before they were used by heating them with ashes and with sand, compared with the one hand, with unprepared bones, and, on the other, with bones dissolved in sulphuric acid, called super-phosphate of lime. The mixture was made in this case by throwing together a waggon-load of crushed bones wetted, and, by a mistake of the workmen, half that quantity only of sand. The heap heated violently, and was in a few days fit for use. The following table gives the results per acre, the amount of the manure being given in bushels, and the produce in tons :—

Bushels.	£	s.	d.	Tons
17 Bones, coating	2	6	9	13
25½ "	3	10	0	14
4½ Sulphated bones	1	2	9	14
7½ "	2	3	0	14
8½ Heated bones and sand ..	1	0	9	13
12½ "	1	11	0	17

Pusey's reports ever abounded with practical suggestions. Thus he remarks, in reporting the results of trials made in the following year : "In 1848, I treated bones with peat-ashes, coal-ashes, sand, mould, and super-dust. The fermentation was equal where the size of the heap was the same; but a small heap, unless carefully enclosed and covered, will not decompose so thoroughly as a large one—perhaps not even then. Whatever the substance employed, it should be in a free pulverized state—should be moistened, and the bones thoroughly dried. Finely-ground bones decay more than coarsely ground. In order to ascertain every possible cause of failure, I procured some boiled bones, and making them up in a heap at the same time with unboiled bones, found that the former had not heated so well, nor fallen to pieces so early as much as the raw bones. Stale bones from a hearse roughly provided, would not heat, I am told, at all. Four cartloads in one heap heated much better, I found, than four cartloads in separate heaps. As the heat does not maintain itself well within a foot of the surface, it is useful to give the heap an external covering of the same material employed in the mixture. On the other hand, I

quantity of ashes or sand employed may be reduced, I believe, to one-half of the quantity of bones. A bone merchant says that, having made up a large heap, he turned it, and watered it afresh, at the end of a fortnight; and that, at the close of the month, very few whole bones remained. The following is the result, per acre, of two trials made here in 1848, with late-sown turnips:—

	Ton.	cwt.
Bush. superphosphate of lime, cost £1 17s. ...	16	12½
Bush. of decayed bones, £1 2s.	13	14
if simple, less than.....	1	0

These bones were from a small heap, and not well decomposed. On two other lots, where the bones employed had been in a large heap, and been better fermented, the yield is just even, viz. :—

	Ton.	cwt.	lb.
5½ Bushels superphosphate, £1 17s....	15	13	67
5 Bushels decayed bones, £1 2s.	15	12	0

Superphosphate always pushes on the turnips faster at first, and therefore is best for late-sown turnips. For those that are sown early, though I do not think that this mode of decomposition will supersede the use of acid, I

cannot but hope it will afford the farmer in some circumstances a useful choice."

In the trials of Professor Voelcker, when 500 grains of rotten bone phosphate was mixed with one gallon of water for twenty-four hours, the grains of bone phosphate dissolved were as follows:—

1st Solution	20.30
2nd "	10.50
3rd "	6.30

So that, as the Professor concludes, these experiments furnish another direct proof that bonedust, in a decomposed condition, is much more efficacious and quick in acting than fresh bones.

Such a retrospect—such researches are indeed valuable, not only for what they add to our store of knowledge, but as confirming us in the conviction that our agricultural knowledge must never be regarded as incapable of a profitable increase. Many a phenomenon, indeed, is yet to be explained—many a fact is to be discovered, from which the present and future generations of cultivators will reap a harvest. No axiom, in fact, is more certain than that, as our amount of knowledge is increased, so is the surrounding circle of our ignorance enlarged.

THE PRESENT POTATO CROP.

We have now experienced such a considerable drought to detract much from the progress of the potato crop, and cultivators are at their wits' end to deal with it. Those planted in ridges are in the worst predicament. The surface is, for the most part, so hard and dry as to prevent the plant forcing its way through. Many of the crops planted on the flat have made their appearance; but the land is very dry and cloddy, and in both cases standing in weeds. Growers are becoming anxious; the crops progress rapidly; the crop scarcely visible anywhere, and where it is seen it is very irregular, and sadly affected with young annuals. The spaces between the ridges are full of hard clods; so hard, that no moderate rain can soften them. We are using various means to promote progress and ameliorate their condition. One method is with the chain-harrow, affixing the cross-roads to the outer-sides "lengthways," and adding another rod weight for the middle. In this way, if the ridges are unpliable, it does much good. It breaks the surface between two ridges by passing along the tops, and the three rollers press the chain-links down and work between the ridges, so that the tops of two ridges are broken through, the three spaces between are totally pulverized, the two outer-spaces being twice moved in going and returning. Another process is by using light-harrows along the surface, both on ridge and flat. This, however, in the present dry state of the surfaces, disturbs many potato sets; it gives liberty to very many that could not possibly break through unless the surface was thus broken. The hand-roller, the crimp-roller are very general resorts, but of doubtful efficacy. They break the surface considerably, they crush many sets and young plants. But then hilling else would touch such hard clods with effect. The various phases of ridge-harrow are also in full requisition, to no very good purpose; they move the spaces between the rows and ridges, but scarcely break any clods. Ridge hoes are more effective, and in cutting down the tops of the ridge break interstices on the top, through which many plants find their way; they also cut up numerous weeds, to their entire destruction in such places. Even the dung-cart wheels are brought

into use as rollers, taking two spaces between the ridges at a time, and certainly with great success. Rollers, can be made very serviceable in breaking down the cloddy spaces: the mode of working them is by taking out some of their peripheries and putting on bosses instead, so as to escape the ridges, whilst the remaining peripheries are rolling the spaces. But these appliances are poor substitutes for copious rains. It is for these rains that every cultivator of potatoes should be prepared: in a season like the present every other farm operation should give way to this, and as soon as the land is sufficiently softened by moisture, let every implement upon the farm likely to be of service in reducing and mollifying the soil be put into requisition so as to pulverize all as speedily as possible, and thus take advantage of a favourable season. If suitable implements are limited on the farm, by all means work them in relays. The manual operations will, of course, follow next. The hand-hoeing may be done, if carefully done, before the whole plant is above ground: it will suffice if here and there one is seen, so as to be a guide to the workmen, who will have a near guess where a backward one will make its appearance, and therefore withhold his stroke or chop upon that spot. Hand-hoeing does great service in this stage of the crop; it jars and loosens the soil so as to promote the early and quicker growth of the plants, and which, after such a stagnant state as an untoward season incurs, is of great importance. This hand-hoeing should be repeated as often as requisite till the crop is moulded up. The horse-hoeing and harrowing are of immense benefit if judiciously done. The soil, after being broken down from its cloddy state, should, if possible, be kept in that precise state which is most applicable for moulding up: hence, care should be taken not to obtain too fine a tilth, lest a heavy rain should reduce all to a pulp. All that is required is to keep it open and free, so that it can be reduced for moulding at pleasure. It is highly important that the crop should be kept clean from weeds; for the same soil that is peculiarly adapted to the growth of potatoes is just the soil that our vilest annuals delight to luxuriate in.

The sow-thistle, chickweed, fumitory, groundsel, bine-wood, harif, wild poppy, charlock, besides docks, common thistles, coltsfoot, and other perennials, also show themselves after all is moulded up, and the crop is apparently left in a safe and satisfactory state. These must all be kept down by hand—hoeing would disturb the moulding up; but if the land is foul, hoeing may be resorted to, and a fresh moulding-up take place. The weeds must be got rid of at any sacrifice, or woe to succeeding corn crops, as the weeds have ample time to ripen their seeds, owing to the late period of lifting the potato crop. This last weeding is frequently of difficult execution, as it should generally take place in the midst of harvest, when every hand is otherwise fully engaged: however, every provision should be made that, if possible, it can be accomplished. The moulding-up of the potato crop is worth a more serious consideration than it receives. It is the too common practice to permit the plant or crop to grow to a considerable height, and then, by one powerful operation, to complete the moulding-up. This operation is often done with two horses, and effected so deeply, and the moulding-up is so high, that great injury is done to the haulm or growing plant. It is far better to make two or more mouldings-up. For instance, if the soil is nicely free and open, and the horse and hand hoeing has been done when the plants are young and in full vigour, a partial moulding a few days after these hoeings will preserve the crop from drought, or even injury by heavy rains, and the moulding

will aid the healthy progress of the plant. The final moulding-up to take place when the stems are well-grown; but in the meantime, it is good practice to mould-up as the plant grows, both for cleanliness and healthy progress. The celery plant is always moulded-up upon this principle, and the potato plant would be equally benefited by the partial and repeated moulding-up, rather than by the final operation, because every grower knows that many plants are injured by pressure, others by being cramped covered up, if the moulding-up is done properly. It is no uncommon practice to subsoil the spaces between the rows of potatoes, and subsequently to mould-up immediately before the crop is fully matured. This is done partly to keep out rains or atmospheric influences, and to cover up any tubers appearing on the surface. If symptoms of disease appear, it has been found very advantageous to cut down the stems, and by one means or other again to mould-up. The disease is certainly much retarded by this process, and in some instances it has been known to have stayed its dire effects. The great thing is to close up the surface as fast as possible, so that no air or moisture get to the tubers. Another important thing is to cut the stems very early upon the discovery of the diseased specks upon the plants, otherwise its progress is rapid and the tubers soon become affected. It is no purpose cutting the stems unless close covering up follows immediately.

THE PRESENT POSITION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Despite the depressing effect of the cattle-plague, it is satisfactory to see how the Societies of Agriculture continue to prosper. Our list of Meetings for the year is still increasing; and many a secretary has to call our attention to some new feature in the arrangement—to some further development of the uses of his Association. Room even has been found for a new movement, and Chambers of Agriculture are springing up here and there; while the Smithfield Club can afford to issue a special report, such as it is, and the Islington Company to build a hall within a Hall, which will take its title from Lord Berners, in honour of that nobleman's great services to the cause. But to all this success there is one signal exception. The Royal Agricultural Society of England is in a bad way. The Finance Committee, according to the latest intelligence from Hanover Square, reports that "the invested capital of the Society has gradually diminished since July, 1865, when the capital was £21,027 19s. 7d., and it now stands at £16,027 19s. 7d. stock in the New Three per Cents." And "the Committee therefore begs leave to call the serious attention of the Council to the fact that the capital has lessened at least £5,000, after taking into consideration the money expended for the show-yard plant, or an annual loss of £1,000; it follows therefore that some means must be adopted to add to the numbers of the Society, or the Council must resolve on a diminution of expenditure." This Report, as it is laconically added, "was adopted." There would, indeed, seem to be no way of getting out of such fatal facts, and so the Council has to choose between increasing its attractions or diminishing its expenses.

Can anyone who looks at the case dispassionately wonder at such a result? Or rather has it not pretty generally been expected? For years past the management has been a close borough; for a long period the sub-

scribers have been systematically kept at arm's length and almost every great question conveniently shelved or shifted off to the shoulders of somebody else. Suggestions for improvement are ignored; proposals for advancement do not come within the province of the Society; and a few amiable gentlemen amuse themselves over an educational bubble that has come, as every one said it would, to perhaps the most singular failure ever known. Mr. Dyke Acland has just published a little advocating a Government Department for Food and Agriculture, in which he enumerates the following subjects as deserving especial attention from Government:—"The whole system of inland communication by road, distinguished from railways and canals. The extension of cheap railways into agricultural districts, where railways can only pay indirectly, as a permanent investment, to those locally interested. The better arrangement, with a view to local convenience, of the districts into which the country is now divided for poor relief, highways, administrative justice, assessed and other taxes. The management of entire river-basins, incorrectly called by some persons watersheds, with a view to drainage and irrigation. The operation of the enclosure commission and tithe and copyhold commissions. The operation and powers of speculative companies for the improvement of land, formed under private Acts of Parliament. The regulation of markets, weights, and measures, and statistical records of prices, and other agricultural facts. The improvement of the veterinary profession. The improvement of the technical education of persons concerned with land." There are very few of these subjects that the Council of the Royal Agricultural Society has ever cared to touch; or, if it have, there is not one it has done anything with. The improvement of the veterinary profession, so far as cattle be concerned, recent events have shown to be little or none, and the improvement of technical edu-

cation under the auspices of the Society has come to much the same thing. The Committee of Education reports that it "cannot grant any certificates of merit, although the competition has been superior in its nature to that hitherto experienced!"—a somewhat amusing way of saying and doing next to nothing at all. But Mr. Acland goes further: "I cannot omit to refer to another class of questions at which I hinted when I joined the County Chamber at Exeter. It is plain that the laws which regulate the succession to landed property, and the employment of capital and labour in its cultivation, are likely before long to be seriously discussed. Mr. Pusey vainly endeavoured, twenty-five years ago, to induce Parliament to deal with a portion of this great subject—namely, security for agricultural capital. It is quite superfluous for me to point to the magnitude of the interests involved in these questions, or the necessity for approaching them with every security for dispassionate and careful investigation of the fact." This is about as plainly put as it can be. When Mr. Pusey took up land tenure as part of its business, the Royal Agricultural Society flourished; and when Mr. Thompson denounced land tenure as "a forbidden topic," the Royal Agricultural Society failed, well content to leave all such matters with the Farmers' Clubs and local Chambers of Agriculture. And thus proportionately as men desert the one they support the others. Surely, never was there a more logical sequence.

But we believe, as at present constituted, the direction of this national organ is incapable of striking out. The dead-weight is too heavy. The spirit of prejudice, of obstruction, and of the Charter lies like lead on the energies of the few; and the very existence of the Society now depends upon the annual show. It has no further hold upon the country, and, as members fall away far faster than they come on, there can be nothing for it but the exercise of some very determined economy.

In the last yearly balance-sheet issued, it is stated that the *Journal* costs the Society something over two thousand two hundred a-year! in other words, just about half the annual income! There is a thousand pounds for printing; five hundred pounds as salary for the editor, and so forth, the steam-cultivation grant not being included in this amount. Now the easiest thing in the world would be to reduce so formidable an item by at least one-half. To the majority of the members it would be a positive relief to receive only one *Journal* in the year instead of two. Moreover, there might be a chance of the quality being improved as the quantity is reduced. And this is just the opportunity of all others to set about any such retrenchment; for the death of Mr. Frere does away with any embarrassment the Council might otherwise feel, and example may be taken from the West of England Society as to the amount of remuneration to be offered any gentleman who is willing to serve under the *Journal* Committee in getting out one annual number. Printing, distribution, and the payment

for articles would be reduced in proportion, and if the volume could only be brought out shortly after the show, we really believe that some people might be induced to read it. We have already expressed our opinion of the last Part issued; while the correspondent of a cotemporary, referring to the prize essay on Customs and Covenants, says: "Living in Warwickshire, I naturally turned to the account given of my own county, and what do I find?—a hasty, meagre, concise and imperfect description, summed up in 11 lines. Now, when I turn over the pages of your *Agricultural Gazette*, I always find something worth reading, and generally very accurate. But really I cannot see the advantage or use of the Royal Agricultural Society publishing such Essays as the one I have above alluded to, unless they are given in a more correct and comprehensive manner. If they are intended to be of any service to the public, or to the readers of the Society's *Journal*, they are at least entitled to more space and consideration, and should not be jumbled together in a few hasty and imperfect sentences. I have no knowledge of the writer of this Essay, or of the contributors to it, nor have I the pleasure of knowing the gentlemen who awarded the prize; but I cannot help saying that, if we are to have no better matter in the *Journal* than we have had of late, the sooner it is discontinued the better. It is incumbent on the managers to provide more trustworthy information than is here given, and to take care that the various subjects which are treated on should be given, so as not only to impart sound intelligence and information, but be placed before the agricultural public in a manner creditable to the Royal Society and its *Journal*." This letter is the more noticeable as the *Gazette* had previously given a word in quasi recommendation of the jumble referred to; but the point of this communication is one we have insisted upon continually for some time past: "If we are to have no better matter in the *Journal* than we have had of late, the sooner it is discontinued the better," especially when it costs between two and three thousand a-year, and, hanging like a millstone about its neck, is gradually sinking the ship, although the sleepy crew does not seem to see the danger.

Then, the Veterinary College takes over £200 a-year from the Society, and what for? Considering how lamentably ignorant the Veterinary profession has shown itself of late as to the diseases of cattle, the payment should certainly be the other way, so that the College might secure all proper introductions and opportunities of studying "the ills it knows not of." As to the hundred and forty pounds wasted over the Education absurdity, if the Council do not cut that item out of their next balance-sheet they should be called upon to pay the amount out of their own pockets. With an annual loss of a thousand a-year, at least fifteen hundred a-year might be saved; and if the Finance Committee only act up to its warning, it will be.

SUMMER GRAZING IN A DRY SEASON.

There is no part of a farmer's business that requires so much of his attention and matured judgment as the management of his stock, and to lift them prosperously through any trying period he is full of anxieties, and it is worthy his best efforts. The present season is peculiar. It was one of the earliest ever known, and the fields obtained a good pasturage, and therefore were stocked fully at a very early period. This would appear to have been an unfortunate case, as the season has turned out. The fields are full stocked, and the

pastures are "gone off." What then is to be done? On no account must the fatting stock suffer—that is absolute loss for the grazing department of the farm. I was a grazier in 1826—the driest summer I have known. We had to resort to every expedient to keep our fatting stock progressing, and it was with the greatest difficulty we could keep our store stock alive. Artificial aids were not so much in use then as now; but much was brought into consumption. Our hay stacks, straw stacks, and meadow lands and clovers were all brought into requisition; and

at last the man was deemed fortunate who could retain any large portion of his straw—to say nothing of his reserved old hay. It was remarkable with what zest and relish the stock eat the old wheat-straw, and with advantage too. Every kind of herbage and foliage, *i. e.*, leaves, rushes, reeds, roadings, &c., were gathered and given to the cattle. The heat also was intense, and water exceedingly scarce in many districts. The cattle were brought home to the foldyards; there was not a blade of grass in the fields. The store cattle lived upon straw, with a little meal or cake, or bran, if it could be obtained. The fatting cattle were provided with such pasturage as could best be found, and clover, tares, &c., mown for them, and corn and cake in addition. Notwithstanding, but few progressed favourably, and numbers of half-meated animals were slaughtered. Sheep did much better; the little, dry, grassy herbage they could find was truly *roast meat*, and abided in their stomachs. This, together with rations of hay, straw, corn, and bran, kept them in tolerable condition; progression, however, being out of the question. This season was quite a boon to numbers of residents in the fens, it being their practice to keep over much straw yearly. They took in large numbers of cattle at from 2s. 6d. to 3s. 6d. per head per week, to feed upon old straw only. The losses in grazing, however, taking in the whole summer, were very severe—far exceeding that from cattle plague in 1865-6. Thousands of cattle and sheep were not worth their spring price at the close of the summer, and many were actually pined to death. Now, I trust we are not going to experience a like summer; but at present (May 20th) the drought is, to say the least, becoming very inconvenient—the grass very scarce, mangolds done, very little old hay left, and not much straw. My object in writing this paper now, is to caution my brother-farmers, to suggest economy in every respect, and to beg them to make provision for such emergencies as may arise. I will endeavour to name some useful suggestions in accordance with the season. It is desirable that a little fresh and sweet straw should be supplied daily to the stock in every field, in such way as may seem most economical and convenient for foddering without waste. This should be done, even if the pasture is not “gone off” to any great extent. All kinds of stock will readily partake of a portion, and it will actually benefit them, although the pasture may (which is very unlikely) be growing and fruitful. This course is not to be despised even by our best graziers in the best of seasons. It acts as a corrective to every animal grazing upon luxuriant pasturage at all times, and to some of tender constitutions and laxity of body it is decidedly of great advantage. I am not sure that it would not prove a fair substitute for cotton-cake in this age of progress. But no one ever thinks of taking wheat, or any other straw, into a bullock pasture; such a transgression would incur and subject him to much ridicule. Well, be that as it may, I venture to

recommend that it should be done now in the way I point out; it will prove a great aid to the pasture, and probably cause its preservation till a kindly rain sets all right again. Of course if the grazier can afford a little hay, all the better; but I do not consider the difference of the two very material. It is the stay of the stomach and the substitute for a short pasture that I look at. The next suggestion I would name is to make use of the various artificial foods, such as, 1st, linseed-cake; 2nd, cotton-cake; 3rd, rape-cake; 4th, bran; 5th, meal, or mixture of them; 6th, corn, oats, barley, or peas. It is observable what a little portion or ration of these good things will suffice to keep the animal from shrinking; it may not under extraordinary privations cause the animal to improve, but if he can be kept from retrograding, much will be accomplished. It may seem ridiculous, but the trimmings of hedges, the roadings of ditches, and the like, should all be taken to the fields as fodder in times of scarcity. The great suggestion I would make as provisions against dry seasons are: 1st, to reserve as many mangolds as possible; 2nd, to lay-in a field—*i. e.*, to make one field on the farm a real reserve for such an emergency as a dry season. It need not be devoid of stock, but so lightly stocked as to permit it to obtain such a full covering of grass as no ordinary drought could damage. This covering must be retained to the very latest at which it can possibly be spared: I mean not full stocked till actual famine takes place. Never mind appearances for one field. I have often found the great advantage of such a reserve, even in somewhat favourable summers. It is just the place to which to take stock, if another field becomes overburdened and “wants easing.” It is the reserve of the farm for any useful purpose. The third suggestion I would here name is to make a really substantial provision as follows: 1st, Sow about this time of the year a sufficient bed of early cabbage. In the autumn select the most appropriate site on the farm, and plant it with these cabbage-plants. In severe winter some may die; but if the crop is good, it is of immense service at any time, but invaluable in a dry season. 2nd, Early in the spring sow a plot of rape, or a plot of tankard or other turnip of free growth: they will be ready for use in June. 3rd, Never be without a considerable breadth of some of the following, *i. e.*, lucerne, sainfoin, chicory, tares, clover, rye, or other artificial grasses. They should stand for mowing, and may be made very contributory accessions and helps in a dry season. The somewhat novel practice of taking up the droppings of the cattle from the pasturage daily is of far greater service in the preservation of a good grass pasture than many would believe: try it. It is impossible to make suggestions which may be applicable to every farm. They must be general; but I trust I have said enough to induce caution and adoption of every economy in grazing for the preservation of the pasture. Every grazier should know best his own position, and will act accordingly. I only hope before this paper finds its way in print that copious showers may refresh our nearly naked fields.

THE HERDS OF GREAT BRITAIN.

CHAPTER LV.

THE DITCHLING HERD.

There are some who hold that, whatever the Short-horn's earlier mission might have been, the sort should now be cultivated strictly for beef points. As regards milk, they would think that the cow had done enough if her calf can follow her, and take six or seven quarts daily

from “Nature's bottle,” and smear its face well into the bargain, instead of being gorged thrice a-day from a pail: and they would wholly resign the dairy business to the Jersey, the Devon, the Suffolk, and the Ayrshire. Be that as it may, Mr. Dumbrell, of Ditchling, is our greatest English illustrator of what Jersey milk-veins are worth. He lives about eight miles out of Brighton, and rather more

than one from Hassock's Gate station, or, as Southdown Hunt men would say, Clayton Holt. His farm consists of 350 acres on the hazel mould, and 110 of it are arable. It goes nearly up to the base of the Southdowns, which spread away to the far distant beacon of firs on Mount Black Cap, which almost looks down on Lewes racecourse. Teanyson tells us how

"All the lavish hills would hum
The murmur of a happy Pan,"

but there are times when Pan has to put down his pipe of reeds, scratch his poll, and think seriously about "ways and means" for the sheep, and when the flockmaster has been fain to hide from his shepherd, because he really does not know what next to suggest.

Mr. Dumbrell's late father began the system of cow-tethering about a quarter of a century ago. The village sages laughed at him; but now they follow out the principle as rigidly as the "gigantic gooseberry" training, upon which they especially pique themselves. Mr. Dumbrell has had the farm on his own account for two-and-twenty years. Besides his cows and heifers, he generally keeps 200 sheep for a year from Lindfield to Lindfield. The Plague year was a "year of grace" to him, as it was to many others, as regards sheep prices; but they were well exchanged for freedom from the agonizing fear of seeing a man running across the fields to you, and feeling sure what tale he had to tell. Everything that human skill could suggest was not only tried, but loyally carried out at Ditchling by the herdsmen, and the scourge was mercifully averted. As we wrote in the *Royal Agricultural Journal*, "Mr. Dumbrell, who had upwards of a hundred Alderneys in milk, commenced washing them all over every morning with a weak solution of chloride of lime, before they were put out to graze. The same disinfectant was kept standing in earthen vessels behind the stalls; the feeding troughs and the drains were also sluiced out with it daily, and every cow was tarred just above the nostrils. This herd was in a position of no ordinary danger, as three owners of adjacent land were losing beasts, and the infected farms were only separated from Mr. Dumbrell's by a hedge. A fourth herd was also suffering within a quarter of a mile. One of Mr. Dumbrell's shippens was bounded by the high road on one side, and by a footpath on the other; but the cows were kept as private as possible, and no fat stock was brought on the farm."

The key-note of preparation for the tethering system is to put the horse and pig dung, along with the liquid manure, on the grass, and the cow dung on the arable land. By this interchange the herbage is sweetened and the cows feed better. The season begins with April 10th on the old grass reserved from autumn. Eight to ten acres of fair meadow land will in the average of years be sufficient for 25 cows from the time they leave the stall until after haymaking; and it will be found in practice that, by the time they have finished, the grass on that part of the field where they first began will be ready to be gone over again. Still it is well to subsidize the system with artificial green crops, rye, trifolium, tares, &c., in case the fly is troublesome, and the cows have to be kept in-doors.

"The change of seasons is his calendar," and we shall let Mr. Dumbrell recount his green-crop calendar, as he told it so well to the Farmers' Club five or six years ago:

"We may suppose that our tethering carries us to quite the end of June or the middle of July, and now is the time, just before the growth of the after-grass, when some care is required, and for which time some artificial provision is needed. Backward-sown tares are the best food to meet the difficulty; with this assistance the after-grass may be allowed to get a good head before it is begun. This brings us to the end of July, and the after-grass will

carry us well through August, and this is the best month of the whole year for butter-making. Through the month of September mangold leaves will be found serviceable. For the end of September or beginning of October white turnips should be provided. Towards the end of October a little hay morning and night is indispensable; and as the weather becomes cold and wet, cows must be taken into stalls at night. Lying out in wet weather is detrimental in every way to dairy stock; but no weather is so injurious to the produce of milk, (besides being likely to cause abortion or slinking), as white frosts, and the greatest care should be taken that cows in calf should not feed out at that time. White turnips, with the remainder of the autumn grass, will carry us on to the end of November; after which time drum-head cabbage must be provided for at least two months. On dry pasture land cows may leave the stalls in fine weather the whole winter, and no exercise and air will be found beneficial to them. On wet cold land, unless in very exceptional years, they cannot go out after the end of December. Cabbage is a very valuable winter feed, as it assists the colour of the butter, and is highly nutritious. Through February and March swedes may be used, and will be found to produce more butter than any other root. During all this winter season a liberal supply of good hay (not heated) is requisite. At the beginning of April mangold comes in, and, if the weather is fine, some old grass reserved from the autumn is very useful, with the addition of spring rape or late-sown white turnips. This, with rye, which must be used sparingly, brings us to our starting-point."

White carrots, which are full of water and sadly lacking in saccharine, are as bad as the red are good; but the latter is by no means an easy crop to grow. Oilcake and meal are quite eschewed, but a little hay is generally given morning and evening, and grains have been used during the last year with profit.

One of the leading advantages of the tethering system is that the feeding is uniform in quality and quantity, and that, by its adoption, more hay can be saved for winter use. The process begins about April 10th, but a good start is seldom made before May-day. Each cow—of which a herdsman can lead four or five to the stake—has a leather-headed halter, with a chain lead of four feet ending in a T. This is fastened to the twelve feet of chain belonging to each stump of eighteen inches, which goes into the ground. Thus each cow has a radius of sixteen feet to work on, and they meet just like mowers. When the grass is short, they are sometimes moved twelve or thirteen times a-day, and about as many inches, so as not to tread on their food. The principle is to work round the edge of the field, and finish up in the middle. The same field may be grazed over three times in a season, if the liquid-manure is utilized. The chains rub and scatter about the top of the dung, so that the processes of scaling and tethering go on together. After a day or two, if "maiden cows" are not pitied, they cease to rebel, and take quite kindly to these meals in a circle. Of course, when "insects flushed with sun" are about, the tethering should be done by night or in the evening; or the cows will fly about and the chains rattle again. When there is no disturbing cause at work, the system tends to preserve condition, as the cow fills herself, and then lies down. Cows should never be left out during a rough night in summer, and should always be brought in at night as soon as October

"Lays its fiery finger on the leaves;"

but, if the weather suits, and there is no east wind, they may lie out a good deal until Christmas. Cows are as good as a barometer. They will never eat on a dewy morning, or rather when rain is not at hand; but if rough weather is in the horizon, they will eat right greedily.

Mr. Dumbrell's stock are all Jerseys. There are scarcely any Alderney cows proper, as the island is nearly built over. The Jersey is smaller and finer than the Guernsey; and, in fact, they agree in very few points, except the quality of their produce, which is equally good. The laws about purity are strictest in Jersey, and their table of points and butter marks somewhat abstruse. The points from which they principally judge a butter-cow are the orange tint inside the ear and the hair curl extending from the twist down the udder. Exclusive of "growth," "general appearance," and "condition," there are 28 points for bulls, and 31 for cows and heifers. A bull cannot be branded unless he has 28 points, nor win a prize unless he has 25. Prize cows must have 29 points, and if they have two less respectively, they can be branded. As the udder and milk veins cannot be fully developed, 80 points make a perfect heifer.

The highest prices ever made for them were those at Mr. Dauncey's sale in Bucks last year, when 96 averaged £47 14s. 6d. Jerseys are delicate, and difficult to fatten if they are lost to the dairy. One has been known to fetch £20 for the butcher, but that was a very exceptional case. A cross with the Ayrshire is more suitable for the knife, but not for the pail. Mr. Dumbrell never rears any heifer-calves, but takes an annual trip in May to Jersey, and brings over St. Helier heifers within a few weeks of their first calving. Some of them have been culled at fifteen months, and others calve as early as at twenty months. They once came by packets to Little Hampton, but the present mode of transit is round by St. Malo to Southampton. Whole coloured with a black tongue is the kind most run upon, and the latter mark is a very choice badge of the tribe. Black tans, grey tans, with a black muzzle, and badger pye are all orthodox, but sadly too many lemon and white come over. The more white about them the less a breeder or dairyman fancies them. A heavy dewlap is against milk, and a small rat tail denotes milk and beef combined. They lose no milking quantities by naturalization, but their horn (which is finer in the Jersey than the Guernsey) always becomes stronger in its character. There are remarkably few "flues" or unsound ones among them, and they soon get acclimatized to the wind as it sweeps over from Shoreham, but wet they hate nearly as much as the Merino shepherd does. Taking drafts and all, Mr. Dumbrell has always a hundred in his stalls, the most roomy of which are devoted to cows when they have been dried off six weeks before calving. The pure-bred heifer calves are sold off at 25s. to 30s. each, when a customer turns up, and are fed till then on skim-milk, but the cross-bred ones are very soon disposed of. In Scotland, the Ayrshire bull calves have their rennet and the whole of their insides taken out and are then sent off by rail to the Edinburgh and Glasgow pie-shops. Brighton has no such slink-veal fancy, and hence the Jersey bull calves are not unfrequently boiled down, rennet and all, for the pigs.

There are four dairies and five shippens on the Ditchling farm. The space for each pair of cows in the stalling is 6 feet 6 inches square, including the manger on the ground: the water-trough between the two mangers is raised 2 feet from the ground, and the drain is about 18 inches from the cows' heels. The walls are never suffered to grow dingy for lack of whitewash, and the comb and brush are seldom cool during the winter months when the circulation requires keeping up. A two-mile circuit takes in the dairies: some are reached through lanes embedded in high hedges, and primrose-studded, and more than once we have pulled up to have a look at Mr. Botting's Sussex cattle, which filled the eye to some purpose, after the perusal of Jersey "milk frames." The East End dairy, which is close by the house, and has always a smaller milk tally in consequence of being

principally devoted to the sale of young cows, was presided over by a Sussex "John Bull." He has been a most sturdy supporter of the rights of the red and all-reds of the county, as the 200 calves and upwards by him from the Jerseys have had all the character of his head, and no white, save a slight dash on the tail, breast, and forehead. An aged "Lavender" was in the row, but not the victrix at the Newcastle Royal (where the herd won three firsts and two seconds), which was sold at Plymouth Royal to Earl Tankerville, but one which came at one off, and has worked for some fourteen seasons. Grace, with the Roman nose and the peculiar tail, was another ancient; and both of them have done good service in their day towards the large skim-milk contract which Mr. Dumbrell holds.

Stocks is the largest dairy, and a man, his wife, and a boy manage the 35 cows which fall to its portion. August is the "top of the butter season," and they then reckon each cow at about 8lbs., and allow seven quarts of milk to the pound. The Tinkler's churn is never idle all the year round, and Brighton takes all the butter under the well-known "feather stamp." The cows have no artificial food, and the old grass gives its peculiar rich tinge to the butter, and so do the cabbage and the swede in their season. After all, as Mr. Dumbrell puts it in his lecture, nothing conduces so much to the production of good quality of butter as a succession of fresh calving cows; and in a large dairy care should be taken to have as nearly as possible an equal number of cows to calve during every month of the year. The floor of the Stocks Dairy, which is Mr. Dumbrell's best model, is built a few feet under ground, and it is at once dry and airy, and shaded from the sun. The milk benches are all of open woodwork, and by means of a hot-water apparatus the temperature is never allowed to vary from 56 degrees, which is found by experience to be the best butter-raising point. The cream may appear thicker by a more direct application of heat, but there is not more butter. A dry warm temperature, combined with a current of air through perforated zinc windows, raises most cream; whereas a heavy damp atmosphere is fatal to it. Under the former conditions it will sometimes come off the pans close by the window "as thick and as consistent as a good deal board." The milk pans are of tin, oblong in shape, and with rounded corners. Nothing can have been better considered. Round pans take too much room on the bench, earthenware lose their glazing, iron crack, and glass ones invariably get chipped.

So much for an afternoon in a Sussex Jersey dairy. Of course the tethering system raises whole bushels of sceptics, like every other novel plan; but doubts are cheap. Mr. Dumbrell's answer at the Farmers' Club was simple, and to this effect—that it enabled him to keep a full stock; and it is no light thing for a man to be able to say that he can keep the stock we have mentioned on the farm, besides cart-horses, "without putting his hand in his pocket for a penny."

H. H. D.

THE ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.—At a special meeting of the Council, held on Tuesday, Mr. Charles Shaw announced that, having been elected under-secretary to the Inner Temple, he was compelled to resign the secretaryship of the Royal Agricultural Benevolent Institution. The Council having expressed its regret at the loss of Mr. Shaw's services, it was determined to call another meeting of the directors two hours previous to the annual dinner, on Wednesday, June 3rd, when arrangements will be made for the temporary conduct of the business of the Institution, as well as on the course to be adopted in selecting another secretary. Amongst the candidates already in the field are a son of Mr. Shaw's, and Mr. J. N. Lee, of *Bell's Weekly Messenger*.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The half-yearly meeting of this Society was held on Friday, May 23, in Hanover-square, Mr. Thompson occupying the chair in the unavoidable absence of the President, the Duke of Richmond. The attendance was very scanty, there being barely twenty Members present, the majority of whom were Members of Council.

The first business proceeded with was the election of a President for next year.

Lord BRIDFORD said he was very happy to have the honour of proposing that his Royal Highness the Prince of Wales should be the President of the Society for the ensuing year; adding that he was sure the Prince would discharge the duties of that office with the efficiency and zeal which he had displayed in all his public occupations (cheers).

The motion was seconded by Sir WALTER STIRLING, and adopted by acclamation.

The members of the Council who retired by rotation were then re-elected, and Mr. T. C. Booth, of Warlaby, Northallerton, was elected for the first time. The following is the list: C. E. Amos, N. G. Barthropp, T. C. Booth (Warlaby), E. Bowly, G. Clive, M.P., D. Reynolds Davies, the Duke of Devonshire, J. Druce, W. J. Edmunds, B. T. Gibbs, W. Hasall, E. Holland, M.P., B. Hornaby, C. W. Hoskyns, W. Hutton (Gainsborough), Lord Kesteren, J. B. Lawes, Sir A. K. Macdonald, Bart., C. Sandell, C. S. Read, M.P., the Duke of Richmond, W. Sanday, the Earl of Shrewsbury, J. Shuttleworth, W. Wells.

The trustees and the vice-presidents having been also re-elected.

The SECRETARY read the following report of the Council:

REPORT.

Since the General Meeting in December, 4 Governors and 43 Members have died, the names of 189 Members have been removed from the list, 138 Members have been elected, so that the Society now consists of 75 Life Governors, 74 Annual Governors, 1409 Life Members, 3888 Annual Members, 15 Honorary Members; making a total of 5461, being a decrease of 97 names. It is with great regret the Council have to announce the death, on the 13th instant, of Mr. P. H. Frere, the highly respected and talented Editor of the *Journal*. While the expenditure of the Society is yearly increasing from the greater extent of its prizes, and the costly nature of the prolonged and scientific trials which are required for implements, the Council regret to observe this diminution in the number of members, and they are driven to the necessity of asking, whether, if the Society is fulfilling the objects for which it was instituted, it receives the support which it deserves. In promoting the improvement of the breeds of stock, in testing the quality and usefulness of the implements required for the cultivation of the soil, in making detailed inquiry into the relations of science with agriculture through the researches of practical and professional men, and in spreading information by means of their *Journal*, their efforts have been continuous, and, on the whole, they believe successful. More recently they have endeavoured by direct action to encourage the education of agriculturists; and though this question has provoked much difference of opinion both in the Council and amongst other Members of the Society, it is one, which having been attempted, the Council would regret hastily to abandon. The Council are anxious in all these matters to progress, and to carry out the objects for which the Society was incorporated with vigour and completeness; but to do this requires the active sympathy and aid of the Landowners and Tenant Farmers of the country, which can only be obtained by an addition to the number of subscribing Members of the Society. The Council have elected Mr. William John Edmunds, of Southrop, Lechlade, Gloucestershire, to be a Member of Council in the room of Mr. Lawrence, resigned; and Mr. Robert Charles Ransome, of Bolton Hill, Ipswich, in the room of Mr. Hudson, resigned. The half-yearly Statement of Accounts to the 31st December, 1887, has been examined and approved by the Auditors and Accountants of the Society, and, together with a balance-sheet for the whole year 1887 and a statement of the Country Meeting account for Bury St. Edmund's, has been published in the last number of the *Journal*. The funded capital stands at £18,027 18s. 7d. in the New Three per Cents., the sum of £24,000 remains on deposit with the Society's Bankers, and the cash balance in their hands on the 1st instant was £3,343 11s. The Leicester Meeting to be held from the 16th to the 22nd July promises to exceed that of Bury St. Edmund's in the implement department. The entries of horses, cattle, sheep,

pigs, cheese, butter, and wool, will remain open as usual till the 1st of June. In order to enable a larger number of the Members to attend the General Meeting of the Society held annually during the Country Meeting, the Council has determined that it be held on the Saturday in the week of the Show. After careful consideration the Council have resolved—

(1.) That in order to reduce the number of implements to be tried at each Show, so as to afford time for thorough testing, it is desirable that a further subdivision in the classes should be made; and have adopted the following classification of Implements for trial; 1889.—Machines and Implements for the Harvesting of Crops, viz.: Mowing machines, reaping ditto, haymaking ditto, hay collectors, horse rakes, carts and waggons, liquid manure carts. 1870.—Fixed Engines worked by Steam and other Power, and Machines for the preparation of Food for Stock; viz.: Fixed engines, chaff cutters, cake breakers, corn crushers, corn mills, linseed mills, turnip cutters, root pulpers, steaming apparatus, dairy implements, bone mills, guano breakers, coprolite mills, tile machinery, draining tools, flax-breaking machines, horse gears. 1871.—Machines for the Cultivation of the Land by Steam-power and Traction Engines. 1872.—Portable Steam Engines and Machines and Implements for the preparation of Crops for Market; viz.: Portable steam engines, thrashing machines, straw elevators, seed shellers, corn dressing machines, corn screens, barley hummers, corn drying machines. 1873.—Machines and Implements for the Tillage of Land by Horse-power; viz.: Ploughs, harrows, rollers, clod-crushers, cultivators and scarifiers, digging machines, potato diggers, drills, horse-hoes, and manure distributors. (2.) That it be considered an invariable rule that the trial of each class of implements shall take place under the superintendence of three judges. (3.) That the prize-list and all the conditions connected with the exhibition and trial of implements shall be published at least twelve months beforehand, and, if practicable, not later than the 1st of July in the year preceding each Show. (4.) That the trials shall commence sufficiently early for them all to be concluded, and the awards made known, before the opening of the Show to the public. (5.) That at Leicester the trials of tillage implements worked by horse-power shall commence on Thursday, the 9th of July; and all such implements, if intended for trial, must be delivered in the Show-yard not later than Tuesday, the 7th of July. (6.) That a preliminary trial of machinery for the cultivation of the land by steam shall take place at Leicester, and a selection of machines then made, for further trial after harvest. Mr. Larking, the representative in England of the Viceroy of Egypt, having expressed to the Society the great interest taken by his Highness in promoting the science of Agriculture, and also the pleasure derived from a visit to their Show-yard at Bury St. Edmund's during his short stay in this country, announced the anxiety of his Highness to offer a Prize Cup to be awarded by the Society at their next show of agricultural implements, and the Council have resolved on accepting the offer of his Highness the Viceroy of Egypt, of a prize for the best implement for the cultivation of the soil by steam-power, combining strength with simplicity of construction, for use in foreign countries, where skilled labour for repairs is difficult to be procured. This Cup, which is of the value of about £150, will be competed for at the Leicester Meeting, and finally awarded at the adjourned trial after harvest. The examinations of Candidates for the Society's honours and prizes in connection with Education have recently taken place in the Society's house, when 13 Candidates presented themselves out of 18 who had entered, and in the opinion of the examiners the competition has been superior in its kind to that on former occasions. The terms approved of by the Council required that every candidate should satisfy the Examiners in the following subjects, viz.: In the Science and Practice of Agriculture and in Book-keeping, as well as in Land Surveying, or in Mechanics as applied to Agriculture; consequently to pass in Book-keeping was essential to success. In this subject, however, no one candidate has succeeded in obtaining even the minimum number of marks fixed by the examiners, who report as follows:—"To entitle a candidate to a first-class certificate he must obtain 75 out of the 100 marks allotted to this subject—to a lower class 80 marks. We have been unable to apportion the lowest minimum (30) to any one candidate, consequently they all come under the category of 'not passed.'" The result is that no classification has been made, nor have any certificates been granted. The following prizes have, however, been awarded to the unnamed candidates as having shown respectively the highest merit in each subject named:—Science and Practice of Agriculture, S. H. Walton, £10; Mechanics, T. J. Elliott, £10; Chemistry, G. K. Walton, £10; Botany, R. G. Scriven, £5; T. J. Elliott, £5; Geology, R. G. Scriven, £5; Veterinary Science, R. Brydon,

£10; Land Surveying, J. Harle, £5. The Council have determined that the Annual Country Meeting in 1869 shall be held at Manchester, subject to the usual conditions. The district for the Country Meeting of 1870 will include the counties of Berkshire, Buckinghamshire, Hampshire, Kent, Middlesex, Oxfordshire, Surrey, and Sussex.

Mr. R. NEVILLE GRENVILLE, M.P., moved the adoption of the Report.

Mr. FYTCH seconded the motion.

The CHAIRMAN having then invited questions and remarks relating to the matters referred to in the Report, after a pause,

Mr. NEVILLE GRENVILLE, M.P., said he would ask whether the Committee were going on with the educational examinations, which seemed to have been a comparative failure, and hardly worth the money and trouble bestowed upon them. While he was on his legs, he wished to pay a small tribute to the memory of his old friend, Mr. Frere, of whose services the Society had just been deprived by death. He was with Mr. Frere both at school and at college, and had a very great regard for him and his family, and they must all feel that the Society had lost a practical, hard-working, and valuable member.

The CHAIRMAN said it was quite clear that anything which could be done by a Society like that for the promotion of middle-class education, especially as it affected the agricultural interest, must be but as a drop in the ocean; but no one could doubt that it was a matter of very great importance. The question of middle-class education had in fact now reached a sort of crisis. First, they had a commission inquiring into the elementary education of the country, and that led to practical legislation on the subject. Then came a University Commission and a Public Schools' Commission, and in each case full inquiry led to practical alterations, which it was to be hoped would be improvements. The question of middle-class education had only recently been taken up—that is to say, there had been a commission upon it, which had sat for the last two years, and had only just reported. But even before that commission was appointed, the Council felt that, though the Society might not be able to do much, it was very desirable that it should contribute in some degree towards the solution of the great question how the education of the middle-classes in this country could be best dealt with, and how the standard for them might be raised to a level with that of the higher classes. The question which seemed most difficult to decide was, whether the education was to be general or technical, and he had no hesitation in saying that there was the same difference of opinion on that point in the Council as existed in other quarters, and indeed without such difference of opinion the Council would not be a fair representation of public opinion, as he really believed it was, with respect to agricultural matters. In the first experiment that was tried the line of education dealt with was general education. For a couple of years that experiment met with indifferent success; and after having given it that limited trial the council thought it would be better to engraft upon it certain alterations which might help to test the value of technical education. That was what was going on now. He was one who took a different view of that question from many others, and therefore he should not like to say much with regard to it. He was afraid that they would not be able to do much good, whichever way the question might be treated; that had been his impression from the commencement; but he thought the Society was quite right in contributing its mite towards the elucidation of the matter, especially as education was one of the matters embraced in the charter. As regarded the meeting in the Showyard, he might observe that it was hoped that a larger attendance would be secured by holding the meeting on Saturday, as that day, though the end of the week, would be the middle of the period of the Show.

Dr. CRAIG said the progress made by that Society in regard to education seemed to be *nil*; what had been done being, in his opinion, rather injurious than otherwise. He thought that until a general system of education was established for the country, no great progress could be made. Giving a few prizes was of no use at all; the money of the Society was wasted. As regarded the progress of agriculture itself, no great advance in education would be made until the matter was taken up by the Government, and it had established an Agricultural College or a University College—they might call it what they liked—with paid professors. This was a matter of such national importance that it ought to be dealt with by the

Government, and until that had been done there could not be any great scientific progress in agriculture. Again, he thought that, by its connexion with the Royal Veterinary College, that Society had damaged itself very greatly. It was impossible for any scientific body to flourish while it maintained a connexion like that to which he alluded. Such a college must be unfettered and free, and its professors and all belonging to it must be guided and governed by members of the profession alone. Having lately been in France three times, he had made it his business to inquire into the condition of the agricultural colleges in that country. There were three, one at Honfleur, one at Lyons, and one at Toulouse. The students were compelled to remain at college for four years, without intermission—that is, without having a holiday. They were in many respects better educated than our medical students, for they were examined in osteology, hygiene, the structure of animals, and botany—subjects which were at the very foundation of their art; and in pursuing their studies they were not allowed to practise on the lower animals until they had undergone a searching examination. What was the case in this country, where the stock was of much greater value than that of France? The students went to the college for six months one year, and six months the next year. Moreover, there was no preliminary examination; whereas in France there was a very strict examination, which must be passed before a youth could be admitted as a student. Abundant evidence of improvement in this respect was afforded during the prevalence of the cattle-plague, when cobblers and farriers were to be found among the inspectors. In Ireland, he might add, there was no veterinary college or professor, and he would leave any one to imagine what must have been the state of things had the cattle-plague extended to that country.

Sir G. JENKINSON would suggest to the Council the desirableness of offering prizes for shoeing horses. Everyone who had had any experience in the matter would corroborate his statement that in out-of-the-way villages it was very difficult to find a farrier who could shoe a horse properly. Instead of the shoe being made to fit the foot, the foot was too often made to fit the shoe; the shoe was applied in a red-hot state, and the poor animal was cut and hacked in a manner which it was shocking to witness. If the Council would direct its attention to the subject a great improvement might no doubt be effected at a very small expense. As regarded education, he thought theory had had too much to do with many of the suggestions that had been made, particularly those which affected the agricultural classes. The great problem to be solved was, how children were to be spared from the farm for education while they were earning something. That was a practical question, which had not been sufficiently taken into account by many who had written and spoken on the subject. No doubt the children of agricultural labourers ought to be educated, even on moral grounds, independently of their improvement for the purpose of farm labour. He might add, that he was a great advocate for Sunday schools, which had been the means of teaching numbers of adults as well as children to read; and he thought that Sunday schools and evening schools would do a great deal towards supplying the defects of education among the labouring class. More was to be done by persuasion than by force; and he believed that in this country great difficulty would be experienced in carrying out a compulsory system of education.

Mr. DENT, M.P., said, having served on the first education committee, and having continued to serve on the present one, although he did not approve of the system which had been carried out, he wished to say a few words on the subject of education. He had never entertained a very sanguine hope that they would do much good in this matter of education. In order to do any great amount of good they must use a larger portion of their funds than they could afford to do. He had always thought that the amount applied to the purpose was quite inadequate. The first attempt was a failure, and he was inclined to think that the second attempt would also prove a failure. He did not believe in the wisdom of the cry which was now heard in favour of technical education. He thought that if they could persuade farmers to keep their sons at school up to the age of 15 or 16, giving them as good a solid English education as they could, and then set them to practical work on the farm, that would prove the best course for farmers and for agriculture. He was now speaking, of course, of the class of small farmers. As to the occupiers of

farms of from 500 to 1,000 acres, they were men of a different stamp, and could appreciate good education as well as any gentleman in England (Hear, hear); but the majority of farmers belonged to the other class; and he maintained that the education which would fit such men for their position was, first of all, a good plain general education, and then plenty of good practical work on a farm (Hear, hear). He did not believe a knowledge of practical agriculture would be tested by means of any papers that were ever sent out (Hear, hear). He was quite sure that no English land-owner, or English land-agent would ever select a man for a farm because he had passed a good paper examination (laughter). Probably he would like to walk with him over the farm which he wished to take, or would like to see the farm which he had been cultivating and upon which he had received his practical education (Hear, hear). That would give him some idea of what a man could do (Hear, hear). He really did not see how this technical education scheme for agriculture was to be carried out. He believed it would be a failure, just as the other education scheme was a failure. The questions on the papers sent out seemed to be very fair and reasonable ones, questions upon which the proper persons might be expected to pass, and he believed that most of them were satisfactorily answered. With regard to the subject of the education of the poor, upon which Sir George Jenkinson had touched, he did not know how they could do anything more than act in their individual capacity as members of that society, encouraging their labourers in every way they could, to send their children to school to be educated. He would go further on that question than the hon. baronet. He thought they would arrive at a compulsory rating system. He would not discuss that question then; but he thought they ought to avail themselves as much as possible of the means which at present existed (Hear, hear). The great cause of the failure of many rural schools was, he believed, that sufficient attention was not paid to the teaching of the smaller children—that there was not sufficient elementary teaching power. And in an Act of last Session (the Agricultural Gangs Act) it was declared that no child should be allowed to work under the age of ten. Well, they knew that before their own children were ten years old they could read easily, and perhaps even write very well; but in rural national schools many of the children of labourers at ten were found to read with great difficulty, and the writing was often scarcely legible. He thought that if children who were old enough to work on the farm were to attend schools in the winter evenings, after being employed on the farm during the summer, that would do something towards promoting agricultural education. As regarded what had been said about the Royal Veterinary College, there was no doubt a grievous lack of knowledge in the veterinary profession generally; but did not that arise to some extent from the fact of the veterinary profession being so poorly paid? (Hear, hear). Speaking practically, he should say that most farmers would rather kill a sheep or a beast than send for a veterinary surgeon (laughter). They would generally get more probably, when beasts were attacked, by having them killed in time than they would if they sent for a veterinary surgeon and ran up a bill (Hear, hear). That was not the case with regard to horses, and consequently the attention of the veterinary profession had been more directed to horses than to cattle and sheep. He did not know, therefore, how the evil complained of was to be remedied, seeing that so long as a man could get more money by killing an animal than by sending for a doctor he was almost sure to have recourse to killing (Hear, hear).

Mr. R. NEVILLE GRENVILLE, M.P., said: The Chairman had not answered his question whether the prizes for the encouragement of technical education were to be continued. He believed that the Society had done more by means of its Shows in almost all parts of England to give practical education in agriculture to landlords, tenants, and labourers than could be given by any other means. He quite agreed with Mr. Dent that the veterinary profession was underpaid; and it had occurred to him that local agricultural societies, instead of giving prizes for the cultivation of roots, and other objects of that kind, would act wisely in devoting the money thus employed to the securing the services of a good veterinary surgeon, who would be attached to the association, in the same way that medical men were attached to clubs, and would be always available when called upon. The veterinary profession might thus be handsomely remunerated, and in

many cases such an arrangement would prevent a heavy bill from falling on individuals at the end of the year.

The CHAIRMAN said: Disapproving as he did of the scheme of technical education, and having virtually withdrawn from the education committee when that scheme was adopted, he must remind the meeting that the system had only been tried for one year, and therefore could hardly be said to have had a fair trial. It would, he believed, be tried for one year more, and the future course of action would no doubt depend upon the success or failure that might attend it.

Mr. LIDDELL, M.P., pointed out that the Act of last session alluded to by Mr. Dent had no reference to the ordinary case of the children of agricultural labourers: it applied only to the case of children employed in gangs. The general question of the education of agricultural labourers had not yet been decided by Parliament (Hear, hear).

Sir WALTER STIRLING thought that, considering the importance of drawing farmers together at the annual Show, the discontinuance of the dinner was to be regretted. The dinner had seemed to him a means of concentrating the attention of the landed interest and agriculturists generally on the meeting. The Chambers of Commerce and the Central Farmers' Club appeared to have no difficulty in collecting a large number of farmers. He quite agreed with the Chairman on the subject of education. They must no doubt look to the growth of the general education of the country as the means of advancing the education of the agricultural interest. No one could say, however, that the tenant farmers had not improved in this respect, or that the tenant farmer of the present day was like the same man as his predecessor fifty years ago (Hear, hear). Nor could it be denied that farmers generally wished their sons to enjoy the advantage of a superior education and superior intelligence to their own.

Sir JOHN JOHNSTONE, M.P., said a previous speaker (Dr. Crisp) thought it desirable there should be a Government College of Agriculture for the farmers of England. He did not think that idea was very likely to be realized (Hear, hear); but a step had just been taken in the House of Commons which appeared to him to be a step in the right direction. The other evening Mr. Acland proposed that there should be a special officer connected with the Board of Trade, or some other Government department, whose duty it should be to look into all matters connected with agriculture, and to whom might be referred any suggestions having for their object agricultural improvement. The motion was seconded by Mr. Read, a member of that Society. Mr. Goschen expressed his approval of the object; and Mr. Hardy, without pledging himself to carry out the plan suggested, said he thought the subject was well worthy of consideration, and he hoped that before long there would be some special officer to whom agriculturists might apply, and who would be bound to look after their interest, instead of their having to go from one office to another, as was the case at present, before they could make their wishes known or obtain any information (Hear, hear). With regard to the Royal Veterinary College, with which he was in some degree connected, there could be no doubt that the preliminary examination—for there had been one—of those who wished to enter had not been sufficiently strict; but there had lately been a discussion in the council on that subject, and it was, he believed, intended to require of candidates for admission in future that they should be well-grounded beforehand in studies which would tend to prepare them for the practical application of the college lectures to the horses and cattle in their establishment. Considering, however, the payments made at present in country districts for the services of veterinary surgeons, it was not to be expected that those who meant to follow the profession would acquire a very expensive education and expend some years of life in order to master the veterinary art (Hear, hear). In this matter, as in others, they must proceed step by step; and he believed there was every disposition on the part of the heads of the Royal Veterinary College to improve education in that department, and to attend to any suggestions which might be offered for that purpose (Hear, hear).

Lord BRIDPORT said: Being a Governor of the Royal Veterinary College, he was in a position to state that the pupils attended two years, instead of only one year, as had been assumed. Moreover, there had been recently instituted a strict preliminary examination. He admitted that some years ago some young men who went to the college were ignorant

of some of the common rudiments of education. As a member of the Education Committee of that Society, he might remark that the twelve candidates who came up for examination passed very creditably, with one exception, as regarded the subjects, namely, bookkeeping. The questions with regard to bookkeeping were of a very simple character, and he was quite astonished to find that the candidates were all unable to obtain the minimum number of marks. He thought the Council ought not to despair as regarded the future (Hear, hear). In his opinion that Society and agriculture generally would derive great benefit from the fact of there being a number of young men to present themselves for examination. Land-agents and farmers throughout the country would see that there was something in these examinations. As chairman of the Finance Committee, he wished to say a word with regard to the decrease in the number of members. True the diminution mentioned in the report was only 97; but, considering that that was a great national society, that its objects were of such vast importance, and that it did so much good, instead of any falling-off, there ought to be a large increase (Hear, hear). There had, however, been a vast increase of late years in the number of small local societies. The Bath and West of England Society appeared to have amalgamated with the Southern Counties Association, and the decrease was partly to be accounted for by those causes. He thought it was to be regretted that these associations were trying to rival the Royal Agricultural Society (Hear, hear). They did not institute trials, and had not the means or power of doing so; while that society had been of great practical utility in showing in what way the best implements might be adapted to the purposes of agriculture (cheers).

The CHAIRMAN, in reply, said one or two suggestions had been made, upon which he must say a few words. Sir George Jenkinson had suggested that prizes should be given for the shoeing of horses. Two things were involved in that suggestion: First, there were the scientific principles on which the work should be founded; and, secondly, there was the practical question of the best and neatest mode of doing the work. As regarded the theory of horse-shoeing, he thought there had never been a better treatise written than that of Mr. Miles, of Exeter, which appeared in the 18th volume of the Society's *Journal*. It was a very simple treatise and easily understood, and there was a cheap reprint of it, which any one might obtain on application. Mr. Miles was a practical man and thoroughly understood the subject, and what he said would prove useful to any village blacksmith, provided he did not think that he knew much more than any one else (laughter).

A MEMBER observed that many village blacksmiths could not read.

The CHAIRMAN did not see how that difficulty was to be dealt with, except by sending to them the "schoolmaster" who was said to be "abroad" (laughter). The article was there for those who could use it. Dr. Crisp seemed to think that the Council were not in favour of great middle-class educational establishments. He (the chairman) begged that it might not be assumed that the Council, as a Council, were in favour of anything unless they had reported to that effect (Hear, hear); for there was the same difference of opinion in the Council as were found outside it, and they had not taken any step *pro* or *con* with regard to the matters in question. Their own prizes for technical education were not at all connected with the great educational experiments which were being tried, and, he believed, with considerable amount of success. Before putting the motion for adopting the report, he wished to make one or two observations upon the financial part of it. A statement of the Finance Committee, lately published, showed that the funded balance of the Society had diminished to the extent of £3,000. He found that that statement had been considerably misunderstood, or its effect had certainly been exaggerated. One newspaper—the *Mark Lane Express*—fell into a very desponding view of the subject; it even went the length of saying that the Royal Agricultural Society was in a very bad way. Now, the fact was that even at the present time they had £10,000 invested in the Government funds, and £5,000 at their bankers'; so that they had not approached very close upon bankruptcy. A state of things in which they had four years' income in hand in advance was not a very desperate position. Then with regard to

the number of members whose subscriptions had been the principal source of their permanent income, that was really a matter of first-rate consequence. He regretted the fact stated in the report that the number of members had fallen off, at the date of the report, to the extent of ninety-seven; but, bringing the return down to that day, and comparing the number then with that a year ago, it appeared that the actual decrease was only four members since last year; so that, practically, the number was the same. Going back four years, to the period immediately preceding the Plymouth meeting, he found the comparative number of members to be as follows: In May, 1865, the number was 5,752; in May, 1866, 5,623; in May, 1867, 5,465; and at the present time, 5,461. The entire diminution in the number of members within the four years was 291, or in round figures, 300. How did that arise? In the first place, he might observe that Plymouth was a very remote part of the country. In 1866 there was no meeting at all, on account of the cattle-plague. In 1867 the meeting was at Bury, which was a strictly agricultural district; and the council had always found in such a district there was, as compared with a populous district, a reduction both in the returns from the showyard and in the accession of members. He was now comparing 1865 with 1868; and taking into account the fact that there had been two country meetings, and that in one year there was no meeting at all, he thought it was not at all surprising that there had been a decrease of 291 members in the last four years. On the contrary, the falling-off seemed to him very small indeed under the circumstances. The average number of members since the formation of the Society was 5,500; and the actual number at that moment was 5,461 (cheers). The object of the Society had been to hold meetings in various parts of the country, at one time in a populous part, at another in a part which might be called a little more backward, and which wanted a stimulant to promote agricultural improvement and bring it up to a level with the rest of the country. When they had gone into one of the last-mentioned districts they had invariably had a disastrous result as regarded the finances of the Society, and they had been obliged afterwards to go to a manufacturing or populous district, where people visited the show in very large numbers, to recruit the finances. Canterbury and Leeds were samples—one of an agricultural, the other of a populous district. In the latter case, the net revenue derived from the show was nearly £7,000 more than in the former, a financially striking illustration of the difference between a populous and a purely agricultural district. After having recently visited two purely agricultural districts, they were this year going to Leicester, which was a populous district; next year they would go to Manchester, which was a still more populous district; and he had no hesitation that any deficiency which had arisen from their going into agricultural districts—a course which was quite consistent, he begged to say, with the principles of the Society and the purposes for which it was established—would be more than supplied by the next two shows. He did not think then that, in a financial point of view, the Society could be considered in a bad position; but it was quite right for the finance committee to tell, as they had done, the whole truth, leaving the members to form their own judgment as to its significance. When the council were pressed to go into a strictly agricultural district, and no doubt there were places of that kind, where the show was particularly advantageous, they were sometimes obliged to reply that they could not then afford to go into such a district, because it was necessary for them to recruit their finances. He believed the Society was quite as prosperous now as it had ever been; and he hoped the appeal for fresh members would be responded to. An addition of a thousand subscribing members to the Society would enable them to do more as regarded those protracted and costly trials of implements which, especially now that straw had been introduced, required such a large amount of time and expense, and which were, in the result, of such great benefit to the agricultural interest generally.

The report was then adopted.

On the motion of Lord BRIDFORD, a vote of thanks was given to the auditors.

Mr. H. CORBET briefly acknowledged the compliment.

On the motion of Mr. HERSE, seconded by Major WILSON, thanks were also awarded to the Chairman, and the meeting then separated.

HADLEIGH FARMERS' CLUB AND AGRICULTURAL ASSOCIATION.

At the spring meeting of this society a new feature in the show of live stock consisted in the riding horses, which were this year entered for the first time. The agricultural horses were not behind former years, while the exhibition of neat stock, sheep, and pigs was not large.

The following gentlemen acted as judges:

RIDING HORSES.—Mr. H. Biddell, Playford; Mr. C. P. Beadel, Hintlesham; and Mr. John Raynham, Oulton.

AGRICULTURAL STOCK AND SHEEP-SHEARING.—Mr. G. M. Sexton, Whersted; Mr. Brook Langley, Boxford; and Mr. B. P. Green, Blakenham.

PLOUGHING.—Mr. John Rush, Monk's Eleigh; Mr. E. Rush, Kersey; Mr. T. Pratt, Layham; Mr. W. Pratt, Layham; and Mr. J. P. Everett, Hadleigh.

Mr. H. Grimwade acted as steward for the riding horses; Mr. R. Partridge for the agricultural, horse, and neat stock classes; and Mr. H. Partridge for the sheep and swine.

HORSES FOR AGRICULTURAL PURPOSES.

Brood mare, Messrs. R. and J. Rand, Hadleigh; second, Mr. John Green, Pond Hall.

Gelding, Mr. W. Gurdon, Brantham Court.

Ghost mare, Mr. J. Matthew; second, Messrs. R. and J. Rand.

Colt under 27 months old, Mr. W. Wilson, Baylham Hall; second (given by Mr. W. Wilson, of Baylham Hall), Mr. William Grimwade, Hadleigh.

Gelding under 27 months old, Mr. William Bacon, Friars, Hadleigh.

Filly, Mr. R. Hoddy, Hadleigh; second (given by Mr. W. Wilson, of Baylham Hall), Mr. W. Grimwade.

Colt or gelding under 15 months old, Mr. W. Wilson.

Filly under 15 months old, Mr. W. Gurdon.

Foal, Messrs. Rand; second, Executor of Mr. Edward Partridge.

RIDING AND NAG HORSES.

Stallion 2 years old and upwards, Mr. Jacobs, Elmsett.

Heavy-weight carrying mare or gelding (given by Lieut.-Colonel Anstruther), Mr. John Moye, Boxford; second (given by J. F. Robinson, Esq.), Mr. Charles Newman, Kersey.

Cob, Mr. J. F. Robinson, Hadleigh; second, Mr. William Gurdon.

Pony, Mr. C. Harper, Hadleigh; second, Mr. S. O. Kersey, Hadleigh.

A consolation prize, Mr. Chas. Newman, Kersey.

NEAT STOCK.

Bull of any breed, Mr. William Grimwade.

Polled cow, Mr. J. Gentry, Washbrook.

Horned cow, Mr. William Kersey, Raydon.

Fat steer or heifer, Messrs. Rand; second, Messrs. Rand.

SHEEP.

Shearling tup short wool breed, Messrs. R. and J. Rand.

Shearling tup long wool breed, Mr. E. Clover, Kersey Mill.

Tup of long wool breed, Mr. J. Nunn, Whatfield.

Pen of five blackfaced ewe hoggets, Mr. James Lord, Edwardston.

Pen of five long wool ewe hoggets of any pure breed, Messrs. Rand.

Pen of five long wool wether hoggets of any cross breed, Mr. William Kersey.

Pen of five long wool ewe hoggets of any cross breed, Messrs. Rand.

Pen of ten ewes of any breed, with their lambs, Mr. T. Partridge, Aldham; second, Executors of Mr. Isaac Strutt.

Fleece of hogget long wool, not being a tup, Mr. William Kersey.

SWINE.

Boar, Mr. S. B. White; second, Mr. W. Grimwade.

Breeding sow, Mr. W. Grimwade; second, Mr. J. F. Robinson, Hadleigh.

THE LOCAL CHAMBERS OF AGRICULTURE.

At a meeting of the Norfolk Chamber at Lynn, the business went on "Porterage and Discount" and Lord Devon's Poor-Law Bill. Mr. E. Oldfield, the Chairman, said his own opinion was that discount ought to be done away with. He believed there were only three markets—Lynn, Fakenham, and Swaffham—where it was taken, and he did not see why it should be taken there. He thought also that the porterage ought to be assimilated to the rate at Norwich market.

Mr. WALTER FLATT proposed the following resolution: "That this Chamber approves of the principle of cash payments at all markets for the sale of agricultural produce; and that the producers attending the various markets in the county are justified in using all legitimate means in order to assimilate the practice to that of Norwich market in reference to porterage and discount." Could anything be more just or more fair or more reasonable? To begin with the justice of the case, as a matter of course every one would concede that to him. He believed no one would object to the assertion that it was just and right and proper that the moment a man's produce was delivered on to the purchaser's property he was entitled to his money without let or hindrance. That was his (Mr. Flatt's) opinion, and had been for the last twenty-five years. It was true that there were many things to be said in reference to this question—especially with reference to the farmers. He was not there to plead anything particular in reference to them; but he thought the farmers as a class had more money employed in proportion to the returns made than any other class of men in this country. No man could make a return here in less than twelve months. If he went and hired 500 acres of land, according to the rental he must produce £4,000 or £5,000 whether he farmed it properly or badly; and before

he could return a single shilling, that capital must lie dead for twelve months. The merchants would say, "That is no business of mine." Very likely, but he (Mr. Flatt) held that if the farmers made only one return in a year they were entitled to demand ready money for everything they carried to market. Why on earth should there be a difference between corn and cattle, and sheep and horses, and everything else? If a man went to market and bought sheep, he paid for them, and there was an end of it. There was no discount there; and he (Mr. Flatt) assumed there could be no porterage either with sheep or bullocks; there might be for aught he knew to the contrary. He was not a very great man, but he had sold as much as £1,400 or £1,500 worth of live stock at one time. Suppose the buyer had said: "Now before you receive your money we must deduct a penny in the £ discount," then he would have had to pay £5, or something like that, knocked off. That was to him very like its being said that a man sold a horse for sixty guineas, but with a perfect understanding that he was to return ten guineas. If they would supply him (Mr. Flatt) with a term to designate that conduct, he would be very much obliged; if not, he should do it in the old-fashioned way, by saying that it was cheating the old one out of the back door. What a man sold for, that let him take, and to that he was entitled without any abatement. Was this just or reasonable? He said it was both. What could be more reasonable than that they should wish to be put in a similar position to that of the gentlemen who attended the market at Norwich? But they were not; they were altogether in a different position. He had taken the trouble to figure up the difference it made in reference to this particular question; and, supposing a man farmed arable land at from 25s. to

30s. an acre, the difference between selling at Norwich and at Lynn was somewhere about 1s. or 1s. 1d. an acre on all that land. Some gentlemen would be surprised at this statement; but such was the fact. He had put the figures down, and he would read them. Supposing the man sold 100 coombs of barley at 20s. a coomb (he did not say the price was really 20s. or 30s., but merely took that figure for the sake of even numbers): at Lynn there would be a deduction of 16s. 8d. for the 100 coombs for portage and discount; at Norwich 5s. That made a difference of 11s. 8d. If they multiplied that 100 coombs by ten, and called it 1,000, the difference would amount to £5 16s. 8d. Then if he sold 100 coombs of wheat at 35s. (unfortunately they had not always that price at Lynn, as they had now) at Lynn they would have a deduction of 22s. 11d., at Norwich 7s. 6d.; making a difference of 15s. 5d. If they multiplied that by ten and called it 1,000 coombs, that was £7 14s. 2d. That, in the aggregate for 1,000 coombs of barley and 1000 of wheat, was £13 10s. 10d. paid to the Lynn merchants above what he would pay if he sold at Norwich. Supposing there were 2,000 coombs of each—4,000 coombs of corn—which was not a very large quantity for a West Norfolk farmer, that would represent the produce of 450 acres of land; and the extra deduction would be £27 1s. 8d., which would amount to about 1s. 1d. per acre. After that, he could not see why on earth they should not assimilate their charges and deductions to those at Norwich. The only reasons assigned to the contrary, that he had heard, were two: One was that corn was dearer at Lynn than at Norwich or the adjacent markets; and the other was that no man liked to disturb the old customs of Lynn (laughter). It was most extraordinary to him that an intelligent man could make use of such a reason—if it was to be called a reason—that corn was dearer at Lynn than at Norwich. How came it about, then, that the Norwich merchants were found in Lynn market? And why did the Wisbech merchants and the gentlemen from Ely come to Lynn? The large portion of the corn sold in Lynn market was bought by what were called outsiders—men who lived out of Lynn. What would the barley market be if it were not for the Narborough men, the Whittington men, the Bishop Stortford and the Burton men? Where would they (the growers) be? (Hear, hear). In fact, all the best barleys were delivered on the rail, and very little was brought into Lynn at all. Of all the corn he had grown last year till the last three markets, only one load had been brought to Lynn, and that was 33 coombs of tail wheat, which he sold to Mr. Gregory, and he (Mr. Gregory) charged him 1½d. a coomb. He (Mr. Platt) told him it was the first and it would be the last. But then it was said by the merchants that they did not like to disturb the old customs. He (Mr. Platt) had thought that everything was so far advanced now-a-days that if they could alfix to anything the term "old," whether it were good, bad, or indifferent, it would be abolished forthwith; but the moment they came to this old oppressive affair, lo! and behold! they had great reverence for everything that was old (laughter). But he said it ought to be abolished, and they ought to introduce something that was better and more to the interest of the producers and the merchants and the consumers generally.

After a brief discussion, Mr. Platt's resolution was carried unanimously.

A letter was read from Mr. Clare Sewell Read, M.P., in which he said: "I forward you Lord Devon's Poor-law Bill. I have already presented some petitions against the 6th and 7th clauses, and I hope our Chamber will at least oppose those parts of the Bill in the country. I cannot think we want paid visitors to be appointed by the Poor-law Board."

Some discussion; but the attendance, which had been very thin from the first, gradually dwindling away, the consideration of the subject was adjourned.

At a meeting of the Warwickshire Chamber, at Nuneaton, Mr. HORLEY, the chairman, said, with reference to County Financial Boards, that, although we might not obtain such a great saving as many people considered, yet it would be a great satisfaction to know that we had a voice in this expenditure; and he believed that the great bulk of the magistrates in Warwickshire would only be too happy to work in union with them! He then called upon Mr. STARTIN to introduce the subject of taxation;

who addressed the meeting at great length; and Mr. FORD moved the following resolution: "That it is the unanimous opinion of this Chamber that the present system of local taxation is unjust, and bears most unfairly upon the owners and occupiers of real property; that real and personal property of every description should contribute a legitimate share towards the poor and county rates, from which are paid the costs of gaols, police, prisoners, lunatics, coroners, highways, bridges, vaccination fees, regulations of weights and measures, and many other things." This was generally supported, and carried unanimously.

At a meeting of the Devon Chamber of Agriculture held at Newton Abbot, when Mr. C. J. WADDE, the chairman, made an address on taxation, with more especial reference to the poor-rate, when it was resolved to petition Parliament to appoint a commission of inquiry on the general subject of local and imperial taxation; and a committee was appointed to draw up the petition.

The arguments offered here, as well as at Nuneaton, are similar to those which have so recently been reported in our columns, that it would be mere repetition to give these like speeches in full.

At a recent meeting of the Devonshire Chamber of Agriculture at Exeter, a motion was brought forward by Mr. Ward of Langridge: "That highway districts should be made co-extensive with poor-law unions and the expense of maintaining parish-roads become chargeable to the common fund of each district." Mr. E. S. Drewe, The Grange, presided. Earl Fortescue, the president of the Chamber, sent a long letter, in which he differed from Mr. Acland, M.P., with regard to the extension of canals from the list of subjects to be dealt with by the proposed Agricultural Department, under whose control he considered they should be placed, for the following reasons: 1st. Because the same kind of injury which is caused by mill-races to land, and the same interference with efficient drainage, is inevitably in many spots occasioned by canals, and ought therefore to be dealt with on analogous principles. 2nd. Because disused or almost disused canals might in some cases be dried up, and with slight modifications converted easily and cheaply into lines of railway, and in other cases might be turned to very valuable account as a very small expense in channels for fertilizing irrigation. The noble earl was also of opinion that the great majority of the highways ought to be charged upon the District Common Fund. If the miserable turnpike system were abolished, at least a portion of the support of the highways might be drawn from an area much wider than the highway district—he meant from the county and in some instances the country. The French roads had long been divided into national, departmental, and communal or parocian roads, and paid for accordingly. The meeting approved of the course proposed by Mr. Acland. Mr. Partridge and others bore testimony to the wastefulness in the present plan of parochial management, and after a protracted debate it was agreed, on the motion of Mr. Daw, seconded by Mr. Holley, of Olhampton, "That the subjects of the highway districts and the highway rates, being of the greatest importance, be taken into consideration at the next quarterly meeting of the Chamber."

TESTIMONIAL TO MR. E. HEWITT.—At the Hants Poultry Show, a testimonial was presented to this well-known judge. The offering consisted of a gold chronometer, with £350 in money, and an address on vellum, which went to say that "the periodical shows for the exhibition of prize poultry may now be regarded as one of the permanent institutions of the country, as their establishment is justified by the impetus which has thereby been given to the improvement of this department of animal culture, an improvement beyond what is known save to those practically interested in the matter. Under their auspices the breeding of fowls has become a science. New kinds have been imported, new varieties have been produced, and the value of choice birds has been greatly enhanced. Feeling how much this success is due to your valuable and unwearied labours, the undersigned hereby desire respectfully to tender to you their sincere acknowledgments of the obligations under which your services have laid them in the promotion of this object."

THE CULTIVATION OF BEETROOT, AND ITS MANUFACTURE INTO SUGAR

Mr. W. A. GIBBS read a paper on this subject at the Society of Arts, on Wednesday, April 15, in which he said: One gentleman, who has been successfully engaged for many years in the refining of sugars, and who has of late been importing from the Continent raw beetroot sugar to the extent of 300 tons per week, has already commenced an establishment at Lavenham, in Suffolk, and made some preliminary arrangements with the farmers for the supply of roots. Others are reported to have pledged themselves to follow in the same track, and this in the face of some five or six former failures. Therefore, I would revert to the valuable aid and encouragement a scientific body such as your Society of Arts can give to this revived experiment—First, by organizing systematic wide-spread trials of experimental culture of this root in various districts, with a view to determine whether any soils and climates in these islands are more favourable to its production than others; secondly, by suggesting careful analyses of the roots so grown, to ascertain their percentages of sugar as compared with those grown abroad; and, thirdly, by stimulating and rewarding agricultural skill and manufacturing ingenuity, in the production of the largest amount of sugar from the plant, and the utilization of its other valuable constituents. The two first of these points, viz., the best locality for the culture, and the obtainable percentages of sugar, seem to call the more for notice, inasmuch as very little, and very uncertain information at present exists upon them. Startling differences of opinion have been uttered in the public papers upon the subject; some asserting that sunshine and light were all-essential; others flatly contradicting these assertions, and declaring sunshine and light to be wholly inimical to the end in view. Some tell us that the root will grow in poor boggy soils and damp climates, and instance North Germany as a corroboration; others insist that it must have a rich deep soil, and that marshland and moisture are fatal. Some dogmatically assert that the percentages of sugar in home-grown roots must ever remain too small to pay for extraction, whilst their opponents enthusiastically confute them with the results of some few isolated growths and analyses. Now there is very little real practical experience at present to fall back upon in this country, because the British farmer has always looked upon the beetroot as a mere garden plant, man-gold wurzel finding much more favour in his sight for stall feeding, and especially for selling purposes, on account of its bigger bulk and weight; but there are a few starting points in this matter that it may be as well to summarise. 1st. The root being long and taper by nature, a deep, and somewhat loose and light staple will afford it the best chance of "form" development. 2nd. Solid constituents, rather than watery bulk, being the measure of its value, a well-drained subsoil and a frugal amount of forcing manures will best produce that value. 3rd. As percentage of sugar is in the inverse ratio to the size of the root, such species of seed, and such mode of culture as will result in the smallest rather than the largest roots, will best obtain the desired product; this fact is so important that it will be well to note the difference obtained by careful analysis; it was to the extent of 13 per cent. of sugar in roots of 4lb. each, as contrasted with 6 per cent. in roots of 4lbs. and upwards. There is another very important consideration attaching to this culture of small rather than large roots; that is, the lesser weight per acre requiring cartage from the field to the factory. Hitherto the Silesian white beet seems to be the species most in favour on the Continent, and by general consent is now recommended for adoption here. It can be conveniently taken as one of the crops of the four-course system of husbandry, *ex. gr.*—wheat, with manure; beetroot; clover; and but to obtain the best result it is recommended to sow the seeds in a sheltered place, about the end of February or the beginning of March, and to transplant to the fields in May. The after-culture consists in hoeing and weeding exclusively, and hence it is a crop that enables a farmer to clean his land very thoroughly. The quality of seed being of paramount importance, and even the best species having a tendency to degenerate, it would be well to direct the attention of skilful cultivators to the experimental trials of other species of seed,

with a view to obtain still higher percentages of sugar from the root. I have been favoured by the Secretary of the Royal Agricultural Society with five choice specimens of foreign seeds, which I have had sown, for comparison with the Silesian, and I shall hope next season to be able to report the results obtained; but to give any extended value to such results similar experiments ought to be carried out in many different kinds of soils, and in various districts of the kingdom, and a comparative analysis made of the varieties thus produced. It is by no means improbable that in this way a species of root might be discovered, containing a much higher percentage of sugar than that hitherto obtained; indeed, credible analyses from various authorities have shown 10, 12, and even 15 per cent. as the contents of certain roots under favourable conditions. Mr. Arnold Baruchson, of Magdeburg and Donau, gives 12 per cent. as the average for Germany; Sir Robert Kane found 14 per cent. in some roots grown in the Botanic Garden, Dublin; Johnston asserts positively that 18 per cent. was found in some beet grown in North Germany; and Vilmorin and Knauer both speak confidently of 18 to 20 per cent. being obtainable. If this result should be ultimately realized, beetroot would be able to compete most successfully with the sugar-cane, seeing that that only contains an average of 18 per cent. But setting aside for the present these future possibilities, it is to be noted that the French and German beet sugar makers, obtaining (as they did) only 5 to 6 per cent. from the roots, have been able to develop this manufacture into a large and profitable trade. It would seem, therefore, a fair inference that if our farmers can produce a root containing even this low percentage, our manufacturers ought to be able to deal with it advantageously. But here it will be urged that former and frequent experience disproves the soundness of that inference. Let us, therefore, take a short summary of the former failures, and trace out as closely as possible the reasons why they were failures. By far the greater number of these attempts were undertaken without any requisite knowledge of the details of growth or manufacture, and with a totally inadequate capital. In the first adventure that has been recently described by some of those concerned in it, the land was unsuitable, the supply of roots uncertain and fluctuating, the percentage of sugar obtained absurdly small and so badly manufactured as to be bitter and unsaleable. Other shortcomings and blunders were also described, but I do not think it was needful to particularize more than those just named to account for the inevitably disastrous winding up of that (very) "limited" company. The next failure was a company started in a hurry, in the spring of 1861, and expecting the farmers to have Silesian roots grown ready for them by the autumn of that same year; the farmers, having probably sown their fields before the contracts were offered, did not respond; but some gentlemen at Mountmellick offered to grow some hundreds of tons each; the public, however, did not take up the shares, so an old brewery was turned into a sort of sugar factory, and proved utterly unsuited to the purpose; some machinery was tardily supplied, but no one knew how to fit it, so that when the roots were ready the factory was not; the farmers grumbled, and the season was nearly past before work commenced; at this stage (that is just when work had commenced) the practical manager was replaced by gentlemen of high theoretic attainments; these failing, a young man from the continent was imported to assist. Fresh contracts were made with the farmers for the following year, and during the summer the old buildings were demolished, and, at heavy cost, new ones were "being erected" when the roots were again ready. Thus ended season the second and last, for the money was spent, the farmers disgusted, and the whole affair speedily found its way into the Irish Court of Chancery. It cannot for one moment be maintained that the disastrous ending of such a disgraceful muddle as this is any evidence whatever, either for or against this manufacture. If men who know little or nothing of a certain branch of trade entrust the management of it to others who know less, I should think that even Zadkiel could predict the result without the aid of the stars. If the mischief ended in the disaster of those who, without sufficient knowledge, undertake

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small ventures of this kind, it would be bad enough, but these bold coupes and timid abandonments of any cause bring upon her cause itself undeserved and unreasoning discredit, and by confirming prejudice in its instinctive dislike to novelty, retard progress and dishearten enterprise. In commendable contrast to this absurdly misconducted affair, is one that has not been made public, but the history of which has been described to me, by one of the promoters, so clearly and succinctly, that, although I am not at liberty to mention his name, I shall take leave to repeat it in his own words:—"The experiment of manufacturing beetroot sugar, referred to in yours of yesterday, was made about thirty years ago by a kind of 'company limited' with a view of proving if it could be done with the root as grown in England, so as to compete in the English market with the then slave-grown sugar of the West Indies and other parts of the world. The capital subscribed was about £2,000. The best method of manufacturing then known in France was adopted. Two Frenchmen, recommended by manufacturers in the north of France, were brought over to instruct and superintend those employed. The machinery, viz: the rasp, hydraulic press, and steam-evaporating pans, &c., were obtained from an engineer who thoroughly understood the whole subject, and I believe the thing had a very fair trial, and some as good sugar was made as the average of the French factories at that time produced. Nevertheless, it was found we could not produce it so as to compete with imported sugar, even though prices were then perhaps on an average 15s. per cwt. higher than at present. The duty on colonial and foreign sugar was much higher than now, and there was every probability that the then Government would be compelled to put a duty on native sugar if its manufacture was extended, and as none of the 'company' inclined to take this and other risks on themselves by continuing it on (it might be) an extensive scale, it was 'wound-up' at very considerable loss. I will just add, from recollection, two of our difficulties—First, That of getting from the farmers a sufficient supply of roots within a reasonable distance of the factory (we found them the seed—white-beet, imported from France) although we gave from 15s. to 20s. per ton delivered; second, we found, then, the pulp from the rasp of no value—could not even give it away. In answer to further inquiries, he explained that 3 per cent. was about the average yield of sugar obtained, and that no duty was charged upon what they made.* Now in this case many elements of success seemed to exist; but the poor yield of sugar, the fluctuating supply of roots, the non-utilization of the residuary pulp, and other valuable constituents of the root, and, finally, the small amount of capital employed, and an apparent want of boldness, combined to defeat what might by perseverance and skill have been developed into a most valuable enterprise. In all these small tentative trials several of the necessary conditions for success were totally wanting. Farming and stock-feeding were never systematically combined with the manufacture as they are abroad; and it will be easy to see that without some degree of independence as to the supply of the raw material, and without some compensation in the shape of beef or mutton for the sugar and other feeding properties still remaining in the roots, the work could scarcely be carried on with regularity or without loss; when the farm is conjoined with the factory, such parts of the roots as by want of skill or from inevitable cause are lost to the latter, reappear in the former in the shape of meat, and this to a considerable extent forms a compensation for the first early blunders. Another point of manufacture, which has never received attention in any former attempts, is the extraction and utilization of the valuable salts of potash and soda that exist in beetroot. Analyses show that an average crop of 20 tons per acre would contain 100lbs. of potash and 60lbs. of soda; the former of these alkalis, when recovered and converted into the mercantile form of carbonate, would represent nearly 1½ cwt. of what is commonly known by the commercial name of pearl-ash—a product which has an average value of between 30s. and 40s. per cwt. This may seem a small matter, but if we estimate the value of the pearl-ash only, and even deduct one-third of that for possible waste, this alone would give an additional value to the crop of 30s. to 40s. per acre. I can speak confidently as to this product being saved and utilized abroad,

* At or about this date, Dr. Ure, without any "rasps," "hydraulic presses," or "vacuum pans," obtained 5 per cent. of sugar from some white beet grown at Mitcham in Surrey.

because I have of late purchased several tons of it derived from this source. I hope to be able to prove, further on in this paper, that the residuary pulp and the leaves may be rendered much more valuable than they have hitherto been; but before passing from the subject of the comparison of foreign processes with English attempts, I would remark that there are three distinct modes of dealing with this manufacture abroad, and only one of these has yet been tried here. The first is, rasping the fresh roots, pressing out the juice, and treating it in the same way as the juice of the sugar-cane, and this is the only method that has been imitated—and very badly imitated—in this country; but there are two other modes in practice—the one finds most favour in France, and the other is very generally practised in Germany. The French plan is to slice the roots thinly, and then steep them in hot water, passing the liquor thus obtained over continually fresh quantities of the sliced roots until the syrupy extract is sufficiently strong for final evaporation and crystallization. One great disadvantage of both the rasping and steeping is that the extraction can only be carried on during five or six months of the year—say, from mid-October to the end of March—because after this latter date the roots gradually deteriorate. This circumstance leaves a large proportion of the machinery and plant idle for the remaining six months of the year, and involves the necessity of discharging the greater number of the workpeople at the end of each season, and collecting others again in the following autumn. It is true that arrangements for obtaining large bodies of men for temporary and fluctuating work are quite possible, as, for example, in harvesting, draining, and other rough labour; but still, in a manufacture requiring some amount of practical skill, it cannot but be a disadvantage, especially at the outset of a new undertaking, where the men lack training to their work. Besides which, if we take a *pro forma* sum of £10,000 or £20,000 as capital sunk in the erection and fitting-up of a factory, the whole interest for the year of the money thus invested has to be borne by the working six months. It would seem, therefore, that if some means of dealing with this manufacture can be adopted, by which the work may be carried on regularly through the whole year without let or hindrance, such a mode of operation would have much to recommend it. Accordingly, we find that in Germany an elaborate system has been in practical operation for many years, whereby the roots are dried in kilns and preserved for use all the year round. Whatever may be the ultimate fate of this manufacture, surely those who come forward to risk their capital and their credit with sufficient courage and perseverance to demonstrate either its possibility or impossibility, well deserve the warm encouragement of public opinion during their experiment, and an equally hearty sympathy and honour whether they fail or succeed. When we remember that success would, in all probability, lead to the profitable investment of some millions of idle capital, and give wage and work to twenty or thirty thousand idle men, all who wish well to their country must wish success to such an enterprise.

Mr. J. C. MORRIS (the chairman) said that as there were single counties in England in which no less than 20,000 to 30,000 acres of mangold wurzel were grown annually, it was evident that the climate and soil were perfectly well-adapted to the growth of the sugar beet.

Dr. VOELCKER thought the paper was more valuable for its suggestive character than in any other respect. He would not offer any remarks on the merits of the various systems of manufacturing sugar from beetroot, because the whole question would really turn upon the description of root which was most remunerative to the farmer. This simple question lay at the root of the whole matter: Was it more profitable for the English farmer to grow large crops for feeding purposes, or small crops for the manufacture of sugar? Although he agreed in many respects with the opinions expressed in the paper, he did not fully endorse the statement that an average crop of beetroot, useful for the manufacture of sugar, would amount to 5½ tons per acre; nor could he concur in the view that as yet they had very scanty information respecting the description of land and climate suited for the growth of beet, or as to the kind of manure best suited for the production of a large percentage of sugar. On these various topics they had very sound information, which had been accumulating during the last ten years on the Continent, and this should be taken advantage of, and the difficulties which the English farmer and manufacturer of beetroot sugar would have to meet must not be lost sight of.

In many parts of England there would be a difficulty in the climate. It was not so much heat that was wanted as a dry autumn for the production of sugar in roots generally, more especially in beet. Just when the root was beginning to ripen they wanted not a very hot but a dry season. For that reason he very much doubted whether the cultivation would be successful in Ireland, or on the west coast of Britain, or perhaps even in the midland counties. Experience rather pointed to the eastern counties of England as the most likely field for this experiment, and he was glad to see that Mr. Duncan had established, or was about to establish, a manufactory in Suffolk, because that was a dry county, and one in which the soil was not all of the best description, some being indeed very poor land. These circumstances he considered rather propitious for the manufacture of beetroot sugar, although unfavourable for ordinary farming; unfortunately the interest of the farmer and of the beetroot sugar manufacturer would appear to be antagonistic. As soon as the farmer began to grow large crops of roots the per-centage of sugar in them would fall; and as soon as his crops fell below a certain tonnage per acre he would find a difficulty in paying his rent. Land on the whole was more valuable in England than on the Continent, and land here was more adapted for the production of beef and mutton. Fattening stock did not pay on the continent, and was, consequently neglected; but it was just the reverse in England; so that all circumstances combined to point out to the farmer the desirability of growing large crops rather than small ones; yet this was incompatible with having a large quantity of sugar in the roots. The average per-centage of sugar in the root in England would not be more than 44 per cent. It was a very good mangold wurtzel which gave 5 per cent. of sugar, and it was only under exceptional circumstances, in cases where they were grown on very poor land, with a very little farm-yard manure, and no guano or stimulating ammoniacal manures, that 7 per cent. of sugar was obtained. He had lately made some analyses for Mr. Duncan, of some beet-roots grown at Lavenham. He had found in roots of about 3lbs. each—by no means large ones—in round numbers, 7 per cent. of sugar. That was above the average in England; whereas in the sugar-growing districts in the north of Germany, about Magdeburg and Halle, 12 per cent. was the average. That gave a very wide margin for profit to the continental manufacturer. Then, again, the value of land here tended to the employment of more capital in farming than was usual on the Continent, where manures, especially artificial ones, were not sufficiently employed, and the consequence was that crops were much smaller, but the per-centage of sugar in the root was much greater than in England. In England manures were largely employed, and as soon as this was the case the per-centage of sugar in the roots diminished. It appeared to him that the whole gist of the question whether beetroot-sugar manufacture could be profitably carried on in England depended on the answer to the problem whether it was more profitable for a farmer to grow small crops with much sugar, and with little manure employed, or large crops for feeding purposes? He was very glad the experiment was set on foot, and no doubt in a year or two very valuable information would be obtained. No man could be found more likely to go thoroughly into the matter, and to obtain trustworthy results of permanent value, than Mr. Duncan; and, even if he were unsuccessful, which he (Dr. Voelcker) hoped would not be the case, he had no doubt that very valuable lessons would be learned from his experiments in Suffolk.

Mr. W. F. WHITE said they had dealt with this article in England, and it was found to answer all the purposes of sugar admirably, but no sooner had they succeeded than they found they were impeded by the excise laws. For instance, he could produce from glucose an article which would be extremely useful to a certain manufacturer who desired to use it; but the excise laws stepped in, and prevented the one from selling and the other from buying. They would permit the manufacturer to buy the glucose himself and manufacture the article he required, but this did not suit him; the operation was costly, a certain amount of danger was attached to it, and it was inconvenient to him to put up the requisite apparatus on his own premises. The consequence was that he had entirely failed to bring this exceedingly useful article into consumption owing to the stringency of the excise laws. Then, returning to the question of beetroot: the chairman knew very well what large amount of money had been lost, literally sunk, in

attempts to extract spirit from it, during the last few years. Upon this point, again, he happened to possess very full information; and he had no hesitation in saying that the labour and capital which had been devoted to that subject had all been lost. He was old enough to recollect the efforts of a gentleman whose name must be familiar to many members of the Society, Mr. John Howard Kyau. He succeeded in extracting spirit from beetroot, leaving behind a deposit or pulp, which, after much labour, he was able to convert into paper. The paper was brown at first, but after some difficulty he succeeded in bleaching it and converting it into writing paper. That was a very excellent operation, and showed what even thirty years ago British capital and energy could do with beetroot or anything else in the manipulation of which they were not interfered with by the excise laws. He was thoroughly persuaded that this matter was yet in its infancy. If he rightly understood the paper, the author was about to enter on a large experiment in this direction, which would be surrounded with considerable difficulties and risk; but he wished him Godspeed; and if he succeeded either in the production of a profit of spirit or sugar from beet, and if the remaining pulp could afterwards be turned to advantage in the feeding of cattle, he would be undoubtedly a great benefactor to his country.

Mr. BOTLY, in reference to a remark by Dr. Voelcker, hoped he might be permitted to ask that gentleman if he had not known instances of the yield per acre having been raised from 20 up to as much as 40 tons per acre by the application of manure, industry, and skill. He believed it was not large crops, but large roots that yielded less sugar, and it was now well-known that a moderate-sized swede was better for fattening and kept better than a very large one. He did not see why there should not be a good weight per acre of small or moderate-sized roots.

Mr. DAVID MARTINEAU, being engaged in the sugar manufacture, and using about 200 tons of foreign beetroot sugar weekly, said the subject was of great importance, and if they could get a supply of sugar at home it would be very advantageous in many ways, and they would be able to command many markets from which they were now excluded by foreign competition. At the same time they must remember that the continentals had arrived at their present success only after many years of trial and difficulty, all of which we could not escape in this country, even by availing ourselves of their experience, for the conditions were not in all respects alike. For instance, our autumns were generally much wetter; and there might be differences in the soils, and in the kind of roots best adapted to them. Independently of that, there were differences in the excise laws. At the present moment treacle was prohibited from being used either in breweries or distilleries, for both of which purposes it was well adapted; and if these laws were continued, so as to prevent the profitable employment of the treacle from the beetroot sugar manufacture, he apprehended the experiment must fail, as he understood it was so nauseous as to be unfit even for feeding cattle. Abroad it was used almost entirely for distillation. If it could be so used here it might make all the difference between a profit and loss in the manufacture. It was, no doubt, the case that the largest quantity of sugar was obtained from what would look very poor roots to English eyes; but he believed that very nearly the same weight per acre of small roots as of large ones might be produced; and if this were so, and if the small roots yielded 10 or 12 per cent. of sugar as against 3 or 4 per cent. from the large ones, that, again, would make all the difference between a profit and a loss. He might say that the trade in general wished the experiment every success, and would do all they could by offering a market for the produce.

Mr. JONES thought it very doubtful whether it would be for the advantage of the country to devote the land to the cultivation of sugar, seeing this article could be imported from abroad much more easily than beef, and they wanted the latter as much or more than they did sugar, whilst the price per pound was about double. In the present system of agriculture a great deal depended on keeping a good stock of cattle on the land, and if the root crop was sent off the land instead of being consumed by the cattle, he did not see how they were to keep up a proper succession of wheat and other crops in rotation. He believed their great object should be to attend to the feeding of stock, for on that depended the superiority of their wheat crops. He thought the average of mangold-wurtzel stated in the paper was rather below the mark at twenty tons per acre,

for he had recently sown some from which he was assured by the seedsman he should get eighty tons.

The CHAIRMAN thought, perhaps, the best answer to the gentlemen who had dissented most vigorously from the idea that this manufacture could be introduced into English agriculture, was the fact that a very intelligent sugar refiner was about to take these risks upon himself, and offer 18s. per ton to farmers for beetroot for manufacturing purposes. He probably knew his own business well enough to feel safe in making such an offer, and, on the other hand, it would pay the farmers very well to grow the crop at that price. Of course it would not be to their advantage to grow an unsuitable article; but what they had to guard against was not so much a large crop as a crop of large roots. He thought perhaps it would be possible to grow a large tonnage of small root; a single lb. per square foot would give 20 tons per acre, and surely it was possible to grow roots averaging 1 lb. each over an acre. Some guidance might be obtained from what was done in Germany. He was told that in France the tax was levied on the sugar as it was manufactured, but in Germany on the root itself; and there it was found advantageous to cut off that part of the root which appeared above ground, as it contained less sugar than the portion beneath. He would venture to recommend to gentlemen about to cultivate mangold or sugar beet, to depend rather upon transplanted roots than on sowing seed; that they should not follow the practice hitherto generally adopted of sowing the seed in rows upon raised drills, which were afterwards levelled, so that the earth was taken away, and the roots were more exposed than they would naturally be; but that they should cultivate seed in seed-beds, and transplant

the seedlings. If the ground was cultivated deeply, well manured in the autumn, and the plants put in in May with the last ploughing, planting them at intervals of 15 inches in very narrow rows about 19 inches wide, they would get a plant which would grow mostly underground, and would probably be better for Mr. Duncan's purpose. Having a plant to every square foot and a-half, if they averaged one and a-half pound per root, they would have 22 or 23 tons per acre of small roots, and therefore of good quality, which, at 18s. per ton delivered, would pay very well. It was worth any man's while to grow a green crop for which he got £20 per acre; and if the farmer in the neighbourhood of Lavenham adopted a proper mode of growing, no doubt they would find the beetroot crop very profitable.

Dr. VOELCKER begged leave to suggest that, instead of applying farm yard manure in the autumn, no manure at all should be used if they wished to give satisfaction to the beetroot sugar manufacturer. He knew that in the north of Germany it was made a condition with the farmers that no manure, either natural or artificial, should be used with the root crop, although it might be used with the one previous.

The CHAIRMAN said Mr. Duncan had issued the conditions upon which he offered the 18s. per ton for the roots; and he permitted the application of manure in the autumn preceding the sowing, and of bonedust in the spring.

A vote of thanks having been passed, Mr. GIBBS, in acknowledging the vote of thanks, said, my own impression is that we require to know a great deal more of this subject before it would be safe to embark in it to any great extent.

CATTLE DISEASES.

Professor ARMATAGE, of the Glasgow Veterinary College, gave the first of a course of three lectures on Veterinary Medicine, in the Theatre of the Royal Dublin Society in the early part of last month. The following is the first lecture:

The question before us is an important and extended one. At no period within the memory of man has the value of our home stock appeared in a form of such magnitude as at the present. Under no other circumstances have we had greater cause for fear and disquietude than those which have existed since about the year 1842. From that time to the present the free introduction of foreign animals has been the means of surrounding our flocks and herds by contagion, and their security menaced by risk of an extreme character. It is true also that a century ago the British Isles were visited by a similar scourge as that which has but barely left us at the present; but it is to be remarked that, violent and rapid as have been its effects, they are incomparable with the ravages which have taken place from causes of a more constant and insidious nature. We are not without reliable authority for this statement, as the papers of the many now collapsed cattle insurance companies would certify. Prior to the period I have named—viz., thirty years ago—the cattle of Great Britain exhibited a total immunity from mortality to which they are now subjected, excepting so far as the outbreak of rinderpest of last century, and the death-rate might be estimated with tolerable accuracy at from $1\frac{1}{2}$ to $2\frac{1}{2}$ per cent. among cattle, but in sheep it amounts to 5, 10, and even 15 per cent. Under the conditions which then existed, contagious maladies were not present as the causes of mortality, nor can it be said as a rule that such affections among cattle and sheep arise spontaneously in, or are indigenous to, our own land. We have been slow to acknowledge this fact, and even the misfortunes of our disbelief have had but little effect in hastening the conclusion. Lamentable as were the losses, equally helpless have we been to avert them. All that human skill and science could suggest or practically demonstrate was exerted in vain under a mistaken form of administration, and to which may be added but little impulse has been derived for maintaining an immunity so earnestly desired for the future. I have stated the subject of cattle diseases is an important and extended one. The forms in which mortality is induced among our domestic animals are various, and open up a wide

field for investigation, as well as for opportunities for exercising measures of a conservative character. We need not look for wide-spread plagues as the only means of decimating our flocks and herds; let us turn to our system of feeding, working, and housing, together with the neglect and unwarranted officiousness which prevail undeniably in many quarters, and we may obtain sufficient reason to contemplate with sadness the principles which make up the number of losses. I am afraid, however, the constant presence of the causes in too many instances have ceased to be regarded as pernicious, or, at least, as a necessary evil. Veterinary surgeons in some districts can testify that the bulk of their cases are those which arise from indigestion, which run on to rupture of some important organ, the formation of calculi within the intestines, diabetes of an intractable character, and probably terminating in farcy or glanders. Farmers are fully conversant with similar results which find an origin in the cheap and inferior bean or pea straw, musty hay, and supposed economical system of feeding their horses with little or no corn. Among cattle they endure losses from engorged or ruptured stomach, &c., splenic apoplexy, black quarter, asthenic hematuria, parturient disease, diarrhoea, and dysentery, &c., &c.; and among sheep, in addition to the above skin and parasitic diseases. The London brewers have to lament the loss of their plump dry horses from rupture and diseases of the liver, &c.; and Scotch proprietors suffer no less, though rather differently, from the continued use of boiled and unnatural mixtures of food. In the extensive coal mines of Britain, where proper attention is not permitted, indigestion and its attendant states carry off many valuable lives; while frequently the causes are looked upon as conditions to be endured, and for which no measure will be applicable, but useless and interfering treatment. From the experiences of the past we have gleaned important truths. The cattle plague, during two years from its commencement in 1865, swept off upwards of a quarter of a million cattle, and the fact has become so startling that the attention has scarcely been directed to the risks which lie beyond. While we have been congratulating and congratulated upon prompt, energetic, and efficient action, and content to withdraw those precautionary restrictions, as promptly and determinedly has an old foe resumed his defiant attitude in our midst. Pneumonia has again taken its place, from which it had been

temporarily banished, and waits only to be joined by the murrain or foot-and-mouth disease in order to renew our experiences of the pro-rinderpest period. All our domestic animals, ovine, bovine, and equine, are in a position of great exposure to dread contagion and death; and monstrous as may appear the losses from an Asiatic plague, they are as "a drop in a bucket" compared with those whose ravages are unmolested, except by a useless and interfering kind of treatment, and whose indisputable origin upon the European continent is too near proximity to our own shores. The various forms of disease to which our cattle are subject, I propose to notice under three great divisions, viz., epizootic, enzootic, and parasitic affections, reserving some space in order to notice the probable losses resulting therefrom, together with suitable general means to be employed in their eradication or prevention.

Upon the subject of epizootic disorders but little has been written, and apart from special centres in the veterinary profession, but little also has been disseminated with benefit. When Youatt and Blaine first undertook to chronicle the diseases incidental to our cattle, these maladies were unknown here, and no distinction occurs in their even now unsurpassed works between those affections termed epizootic and enzootic. Throughout their pages we read of local maladies classed under the head "epidemic," and with full candour one writer expresses his inability to state what are epidemic and which are endemic. At this time nothing more could be expected. The knowledge of plagues was confined to continental countries, where alone they raged with violence; and, therefore, when a local disease exhibited the tendency to affect a larger number of cattle than usual, or to extend its operations over a wider area, it was rewarded with the term "epidemic." Information then extant was faithfully compiled, but it is inadequate for guidance under the aggravated conditions which weigh heavily upon our country at present. By the term "epizootic," I wish to be understood those diseases which, having their origin in some special cause and locality, when removed to other districts affect animals of all ages, totally apart from breed, nature of soil, or climate, become highly contagious, and propagated only thereby. Such disorders are easily distinguished from those indigenous to our soil, in not being amenable to therapeutic measures, in occupying a vast area, with a tolerably certain tendency to prove fatal in the majority of instances. Such diseases are the cattle plague, rinderpest, typhoid or enteric fever, which originates in the Asiatic steppes; the lung complaints, or pleuro-pneumonia of cattle, which finds a station in Central Europe, and parts of Asia and Africa; the murrain, vesicular epizootic, or foot-and-mouth disease, probably also of Asiatic origin, but which has become centralized in Hungary and south-eastern Europe, where it is indigenous; lastly, the variola-ovina—sheep-pox, or small-pox, as it is variously styled—which first arose in Asia and Africa, and is now acclimatized in the Eastern parts of Europe. Let me repeat: Epizootic diseases are, without exception, highly contagious. In the country where they are spontaneously developed they are characterized by a mildness which cannot be known here, but when introduced to regions beyond, appear most destructive. In all cases they are most severe when they break out in the stock of a fresh district, but suffer modification and diminution in their fatality as they are continued in that district. If, however, the virus of the affection is renewed by the continued introduction of infected animals among native creatures, eminently susceptible, violent outbreaks are to be feared in proportion as the proceeding is tolerated. Lastly, epizootic diseases are emphatically of continental origin. They travel from the east, where they are bred, towards the west, and reach us by the ordinary routine of cattle importation. Great misgivings are afloat on this point, and to which we may trace the paralyzing influence which was brought to bear upon the legislature in reference to the late visitation of cattle plague. We have, however, this undoubted fact on our side, and which proves our assertion—viz., those farms and homesteads, together with the smaller islands, to which foreign importations are not made, are always free from diseases of an epizootic character. Open up a free communication with the ports on the continent from which are exported the cattle from the east, and they become centres of contagion in common with the stations which have been formed by the same cause throughout Britain. I now purpose bringing before you in brief detail the principal features which characterize, in a

special manner, those disorders comprised in the term epizootic, and upon which we have need to exercise a great amount of vigilance.

A. The Steppe Disease—Russian Cattle-Plague—Contagious Typhoid Fever of Cattle—Typhus Contagious Bovum.—If I were requested to furnish an example of a most rapidly-fatal disease among cattle, I could, without hesitation, name the steppe disease; nay, further, it may be estimated the most fatal which has been observed, and in consequence has been termed "rinderpest" by the Germans. It is a highly contagious fever, attended with inflammation and specific lesions in the alimentary canal, which correspond with those of typhoid or enteric fever of man in a most remarkable manner. In consequence of an impacted condition being observed in the third stomach in animals which succumb to this affection, the term "löserdürre" has been applied by older writers, and even respected by celebrities in our own day. But this condition is not peculiar to cattle-plague, as in the majority of instances in cattle where disease terminates fatally distension of the omasum by collections of dry, solid food is invariably present. *Symptoms of the Disease.*—A period of incubation, during which no appreciable signs of disorder are manifest, always precedes this, in common with all epizootic affections. It may vary from four to fourteen days, but it has been known to terminate as early as twenty-four hours after contact with diseased animals. We understand by the period of incubation that time which elapses between actual contact with infected cattle and the manifestation of the symptoms which denote the disease. It is that period in which the virus of the affection, being introduced within the system, multiplies and accumulates that power and malignancy only to be observed in contagious maladies. It is a period, too, during which an inconceivable mischief is executed without indication, and baffles all skill to recognize. It is a period also when the fate of all animals in near proximity is almost certain to be doomed, and among which it soon spreads with alarming rapidity. Dulness and prostration of strength, a hoarse cough, and slightly staring coat are among the earliest symptoms; and usually a shivering fit may be observed. But a brief period exists between these and the appearance of high fever, accompanied by catarrhal symptoms. The mucous membranes are the seat of the affection, from which purulent discharges flow most copiously. Abdominal pains succeed each other rapidly or are sometimes tolerably persistent; nervous twitchings over the body are to be observed; the strength rapidly declines; the skin is apt to become detached from subjacent tissues, and the spaces being occupied by air (emphysema), as a result of decomposition, form large tumours over the body—especially the back—and give rise to a crackling sound when the hand is passed over them. Violent diarrhoea succeeds an apparently existing constipation, by which the vital powers are exhausted and complete dissolution accelerated. Indeed, such is the progress of this affection that, in animals which die under its influence, putrefaction may be almost said to precede the departure of life. *The post-mortem appearances* are characteristic. The general evidence of emaciation is present in all the tissues, which are wasted; fetid accumulations of gas are liberated when the abdomen is opened or intestines punctured, and the same are present between the muscles and beneath the usual lining membranes of cavities; large spots of extravasated blood (ecchymosis) occur over various parts of the intestines, urinary and generative organs. The third stomach is usually impacted in consequence of the arrest put upon digestion, and the organ is frequently very much distended. The fourth stomach and small intestines are the seat of active inflammation; and beneath their lining mucous membrane profuse exudation of plastic lymph is thrown out, which eventually forms the points around which ulceration commences. In a few cases I have seen ulceration attack the leaves of the omasum (third stomach); but these lesions are common to several local affections, and not always present in cattle-plague. Beneath the lining membrane also of the respiratory and circulatory organs patches of ecchymosis are found, which are further indications of the state of blood-poison existing.

Treatment.—The most disappointing results occur from the treatment of this affection. The condition in which animals are found, even before the symptoms announce the crisis of the disease, clearly demonstrates the rapid destruction of vitality which has already taken place. All curative measures are entirely useless; and those animals which recover after

such have been adopted live to display an exceptional constitution, whose preservation could not be ensured by any operations but those presided over by Nature herself. In those countries where the disease originates spontaneously, and others adjoining, all and every conceivable measure has been put into execution in order, if possible, to diminish the losses by treatment; but even there, where mildness is its character, and fatality considerably less, the proceeding has been abandoned, and the hope of success derived only through a system of government surveillance. Years before the plague ever visited our shores, continental countries had been known to suffer from periodical invasions by this fell disease. For upwards of fourteen hundred years the history of its ravages are before us; and scarcely a nation upon the European continent exists but which has to lament the movement of armies through their territories, who carried plague-stricken animals, as beasts of burden, on their marches. From the days of Theodosius and Charlemagne to the present vast havoc has been endured. It has decimated Iliria, Northern Italy, France, and Belgium, and, when banished therefrom, found means whereby it could spread towards Hungary, to commit further destruction; and thus it went on, following, like grim Death, in the wake of revolutionary armies for four hundred years, when we find ourselves at 1234. Indefinite records fail to give accounts of more than one serious outbreak between that period and 1625. It then appeared in the north of Italy, and extended along the banks of the Po, entered Padua and Venice. From 1709 to 1717 it again raged with violence. Tartary, Muscovy, Poland, Bessarabia, Croatia, Dalmatia, Upper Italy, France, Hungary, Germany, Switzerland, were invaded; and from thence it spread northwards to Silesia and the Baltic. In the kingdom of Naples, 70,000 cattle perished; many thousands in Silesia. In Holland alone not less than 200,000 fell victims; and in Europe, it is estimated that 1,500,000 animals were sacrificed. In 1713 it found its way to England, but was arrested in the counties of Essex, Surrey, and Middlesex, by the slaughter of 6,000 cattle. From 1713 to 1730 it was characterised by periodical outbreaks here and there. By the wars of the period it was again roused into activity, and rapidly spread over the greater part of Europe; Hungary, Bohemia, and Germany being laid almost waste. In 1745 Holland was again almost decimated, and from thence it came to England, and for twelve years continued to devastate our herds. In the third year, 80,000 cattle were slaughtered, and double that number is said to have died of the disease. In the fourth year they were destroyed at the rate of 7,000 per month, in order to arrest its progress. In Nottinghamshire and Leicestershire, during 1747, 40,000 cattle died, while Cheshire lost 30,000 in six months of that year. For thirty years it continued to hang over Europe; and it is computed that upwards of 3,000,000 of cattle perished. In 1770 Holland again lost a great number of cattle from the plague, no less than 375,441 being sacrificed. From thence it passed on to Picardy, and destroyed 11,000, and returned again with renewed vigour to Holland in 1773, and devastated again Flanders, Picardy, and neighbouring countries. It followed the army of Napoleon into Italy; and during the years 1793, 1794, 1795, from three to four millions of cattle perished in Piedmont. It was carried to the Rhine provinces, thence to Switzerland in 1796, and found its way back to the very gates of Paris; not less than 12,000,000 frs., representing the value of 130,000 animals which died in France, while 11,047 were sacrificed in the Rhine provinces. From 1792 to 1815 wars with Russia and other countries were constant, and the pestilence again appeared, Austria, Bohemia, Saxony, Prussia, Poland, Hungary, Silesia, and France being again sufferers. In 1827 the Russo-Turkish wars were the cause of another outbreak of the disease in Bessarabia, Wallachia, Moldavia, Podolia, Volhynia, Prussia, Saxony, Hungary, and Austria. In 1830 it appeared in Iliria, being conveyed from Austria. In 1843 it was conveyed to Egypt and Nubia, 300,000 head of cattle dying therefrom. In 1843 it broke out again, when 35,000 died; and upon a third invasion, 15,000 died, or in all 350,000 cattle were destroyed. In 1844 the countries bordering upon Russia were threatened; and in 1850 Austria was invaded for the ninth time within the present century. During 1852 and 1853 it was principally confined to Russia, where great losses occurred. In 1854 it spread over a vast area of European territory, Austria, Poland, and Germany again suffering greatly. We

next hear of it as affecting the cattle of our armies during the Crimean campaign, and also of it passing again to Poland, Austria, and Prussia. Our next experience occurs at our own doors during 1865, '66, and '67, but I need not write its history; that is already compiled in forms of an indelible character, and will only be read with interest by a succeeding generation. From England it was conveyed to Holland and France, and notwithstanding the most stringent measures have been exercised, practices of a surreptitious character have been the means of prolonging its visitation, and disseminating the influences of contagion to various parts of the Continent. Ample must have been the opportunities, during fourteen hundred years, for testing the efficacy of remedial measures; and it is but a duty to acknowledge, up to this time they have been of no avail. My intercourse with the members of my profession has brought me into conversation with the eminent men from all parts of the Continent, and but one opinion pervades the minds of each. That is the result of long experience and observation in the home of the plague—on the spot of its birth. *The remedy for this, as well as all other epizootic affections, is not to be found in medicine, but in measures which shall enable us to assume the defensive position during an unrestricted free trade, which the conditions and requirements of our country demand.* My personal experience extends to the late outbreak when it occurred in the metropolis of England, and my investigations were also continued throughout various parts of the southern and midland counties. Throughout, and in every case, the disease gave unmistakable evidences of its only mode of propagation being that of contagion. It has occurred in more instances than one that the origin has remained unexplained for some time; but the evidences we possess of the subtlety of the poison leave no doubt as to the ready communicability by the clothes of persons, hay, straw, manure offal; animals, such as dogs, and even rats and mice in drains, probably also flies, during the hot seasons, and even by atmospheric air. Such disorders, then, call for measures in advance of their observed effects, and the preservation of our home stock will depend upon the display of sound judgment, which can result only from a scientific estimate of their origin, effects, and mode of propagation. To attempt a cure is to put a firebrand through the corn, and f.a. the flames of contagion, which only die out with the last spark of animal life. I have purposely extended my remarks upon the nature of the cattle plague in order that a better understanding may be conveyed regarding other similar affections which are to be adduced, and which will, in consequence, be treated briefly. We now turn to

B.—Pneuro-pneumonia of Cattle.—This malady has been variously termed the lung complaint, lung disease, lung plague, epidemic, new disease, &c., in various parts of Britain. It is called "Langenseuche" by the Germans, and by the Italians "Polmones dei Bovini." Like "Rinderpest," it is a highly contagious disease, peculiar to the ox tribe, exhibiting no preference for the breeds or age of cattle, nature of soil, climate, season, &c. By some writers it has been estimated a malignant fever, whose local manifestations are extensive exudations of an inflammatory character, confined to the lungs and cavities adjoining those organs. Pneuro-pneumonia occurs in two forms—an *apparent*, in which serious evidences of constitutional disturbance take place, and the *latent*, in which great difficulty frequently occurs in diagnosis during early stages of the complaint, especially when lesions are found to have advanced considerably, rendering life a paradox.

Period of incubation.—As in other contagious affections, we have in this an incubative stage which may vary from five to six weeks; but, as a rule, about 40 days are admitted to be the period which elapses before the local symptoms are manifest, and which has been found in practice reliable data. Cattle returning from fairs, or from localities where the disease prevails, have been known to show symptoms at about the time first named: and it has become a settled fact that during the first six weeks of the cow in an infected town dairy is the time during which the functions of health only are executed. Attempts have been made to prove that a period of six months might elapse before contagion is developed. Such, however, is not possible, and the only reasonable inference is that the animals so affected must have been exposed to some contagion which had escaped observation.

How to detect the disease.—In order to detect the affection, a considerable acquaintance with the habits of healthy animals

is requisite, together with frequent observation, and, added to this, no investigation can be complete without exercising a knowledge of auscultation, *i. e.*, a study and comparison of the various sounds which take place during respiration. This is ordinarily effected by applying the ear to the sides of the chest, and is greatly assisted by adopting percussion, or the means of eliciting sounds by tapping the sides with the knuckles or some special instrument. These means have proved eminently serviceable in numerous instances, whereby otherwise unsuspected animals have been singled out and removed, and the remaining animals preserved. As a rule, pleuro-pneumonia is understood to attack animals but once during their lifetime. Some, however, assert the contrary, and point to secondary attacks, which, if investigated, would doubtless turn out to be a relapse of the former. It is not unusual for only part of the lung to be affected in many cases. The affection is limited to a certain area, and to all appearance the creature makes progress towards convalescence; but in a few weeks the surrounding tissue which had been separated by a cystor capsule, which circumscribed the diseased portions, now becomes involved and goes through similar changes. It is thus that animals, which had to all appearance recovered, within a few weeks are again prostrate under the accumulation of symptoms which characterized the former attack, and in reality not having recovered therefrom. Under usual conditions the symptoms of pleuro-pneumonia are readily interpreted by the dairyman; but, at this stage the mischief is accomplished from which there is no escape. The animal has entered almost the last stage, and dies partly from suffocation, in consequence of the lungs becoming impervious, or a species of drowning by the accumulation of vast quantities of water within the cavity of the chest and membrane surrounding the heart.

Treatment.—As far as veterinary knowledge extends, there are no means of a therapeutic character which are available for cure. I have known good to be accomplished in certain instances, but am of the opinion that if nothing but careful domestic attention had been bestowed, as much benefit would have resulted. All compounds of medicine are but so much wasted, and money thrown away; and in all cases nearly the information which has been derived from treatment is that of signal failure to control or modify the disease. Acting upon the knowledge that the disease makes but one attack during the lifetime of an animal, it has become the practice in some establishments to adopt inoculation. In Glasgow, Mr. Havie, who keeps usually from 1,800 to 1,500 animals, has been in the habit of purchasing young stock and at once inoculating them, or more usually placing them among cattle suffering from the disease. At the best, it is a very circuitous mode of obtaining immunity, and a proprietor should at least possess unlimited resources at his banker's. Although we admit the reduction in severity which marks the disease after having continued some time, the modification or mildness thus induced may be found at the end to represent loss of fortune, and inevitable ruin in many instances.

The contagious nature of pleuro-pneumonia is a fact admitting of no doubt whatever.—Wherever the movement of cattle has taken place towards other countries, thither has pleuro-pneumonia been conveyed in all its severity. Large tracts of land, of mountain, plain, or valley, exist upon the continent of Europe, as also Asia and Africa, which afford the means of livelihood to thousands of peasants, by breeding and rearing cattle and sheep. These at certain periods are collected, and as the great demand occurs westward of their homes, they are driven in that direction. These demands have also increased in ratio to the increase of population upon the whole of the European continent. The requirements of revolutionary armies also have rendered the use of cattle, both as animal food and beasts of burden, an indispensable item; and when peace followed war, the tide of industry was turned in Belgium, Germany, and Holland to the manufacture of starch, sugar, and spirits, which opened up a demand for cattle to consume the refuse grain, which demand has also continued by the extension of these trades. It has been stated by continental writers that pleuro-pneumonia appears in the Alps, Pyrenees, and Jura, together with the uplands of Silesia, Suabia, and Hesse, distinctly as an enzootic disorder; but move it hence, and it becomes the insidious thing we observe it to be. It is never absent from the dominion of Prussia, very common in Germany and the Bavarian States, and exists only to a slight extent in Austria. This matters but little to us at the present;

but originate where it may, we find certain localities where the affection finds a station. The constant accession of fresh animals favours the continuance of the disease, and their constant removal determines its dissemination to all parts to which they go. Until the year 1842 England was free from the scourge. At that time pleuro-pneumonia was raging with violence in Friesland; and as our trade with Holland was rapidly increasing, British ports were at once thrown open to foreign stock, and at the same time pleuro-pneumonia, which has not yet been extinguished. Our towns, where large markets are held, are the centres from which the malady is propagated. Town dairies and cattle dealers' farms are also fruitful sources, and from which we have no hope of escape, under the present aspect of affairs. Pleuro-pneumonia does not resemble cattle plague in its mode of attack; it is insidious, and steals among a number of cattle, escaping observation, and defying all attempt at detection. The period of incubation being of greater duration, is also a most favourable principle to its murderous attack. Animals live on, but as they do so, and probably even while they exhibit unmistakable signs of health, may give out the seeds of poison to others around. It is thus with the short lives of animals, and the constant purchases which are effected in our markets, that contagion is kept rife, the mature virus of the affection being regularly introduced from abroad, particularly by those from Holland. While the continent is charged with it, and our ports are open, it is an utter impossibility to avoid the consequences. A rapid traffic in cattle, which our country demands, also proves an obstacle to its extinction; and summary measures, which might be in other diseases available, prove no barriers to its wholesale distribution. I have now to direct your attention to the third, and by no means less important affection included under the term enzootic, *viz.* :—

C.—Aptha.—Various appellations have been given to this affection in various parts of the country. In Scotland it is known by the name "murrain." In England, when it first appeared, "epidemic" was applied to it. Generally it is known as the "foot and mouth disease," "blisters," &c. It is the Eczema Epizootica of Professor Simonds. In the home of its birth it appears as an aphthous eruption in the mouth and on the feet of cattle, sheep, pigs, goats, horses, and even wild animals; while the females of the different species also suffer from implication of the teats and udder. In Britain, however, it has rarely been observed in other animals than cattle, sheep, and pigs. Some years ago I observed a mild attack in a horse which stood in the byre of a town dairy, where cattle had suffered from the affection. Acton, a writer in the *Veterinary Review*, vol. iii., p. 329, also records several cases which occurred among horses under his care. Other cases have also been recorded, but I have no distinct references of them. Aphtha is usually characterized by mild febrile symptoms, which, being highly contagious, is propagated with remarkable rapidity and exactness. This feature is acknowledged by all who have experienced its effects. It has been known to be communicated to man, two cases of which came under the notice of Mr. J. B. Hialop, F.R.C.S.E., of Houston, Renfrewshire, as a result of direct inoculation from diseased cattle, instances in which the communicability of murrain to man is undoubted. Regarding its capability of being transmitted by the use of milk from diseased cattle, Mr. B. H. Watson, Coldstream, Berwickshire, and Dr. Balfour, Edinburgh, also adduce positive proofs. Numerous instances have also come under my own observation where pigs and calves have suffered from the consumption of milk from affected animals; and my friend, Charles Hunting, found, during the prevalence of the malady in 1862, that even fowls in the farm-yards suffered. The poison of aphtha is transmitted with remarkable facility. Cattle returning from markets carry it to the byres of dairy-men, farmers, and cattle-dealers; and I have known outbreaks to occur among animals which have been tied up to fatten for some weeks, and previously taken direct from the farmer's hands, when we had direct evidence that the incubative stage was past long before, and no other cause could be assigned than the passage of cattle occasionally along a contiguous by-road, and in trucks over a main line of railway within a few hundred yards. Butchers who visit cattle frequently with the view to purchase, farm men visiting healthy farms, after leaving others where affected animals are kept, dairymaids milking healthy and unhealthy animals simul-

taneously, cartage of green food, hay, and fodder generally, manure, &c., have all been known to convey the disease. Pastures also upon which diseased animals have been turned, and railway trucks in which they are conveyed after exposure in public markets, are amongst the most fruitful causes. The period of incubation is very short, varying from twenty-four hours to three or four days; and the disease is ushered in by a shivering fit, quickly succeeded by a luxuriant crop of vesicles upon the membrane of the mouth and tongue, between the digits, and upon the teats of female animals. Copious discharge of saliva, with fluid from the ruptured vesicles, takes place from the mouth; and these, together with the fluid discharged from vesicles in other parts being pregnant with the animal poison, prove fruitful and permanent sources of propagating the malady. Although not estimated a fatal disease, nevertheless we witness numerous instances when death terminates the attack, which are due, of course, to complications in which vital organs are affected. Milch cows and pregnant animals abort: sheep and pigs suffer heavily; and although conditions are arrested, and death deprived of its victims, the losses which are sustained by murrain are fearful to contemplate. It frequently proves a precursor to other diseases; and when it occurs in a stock of cattle which have recently been purchased, the owner may congratulate himself, after partially recovering from murrain, he does not lose it by pleuro-pneumonia. In numerous instances, during 1865 and '66, the cattle-plague was preceded by the foot-and-mouth disease, which not only aggravated existing conditions, but masked the progress of the plague, and delayed the adoption of suitable measures which might have arrested the scourge. Aphtha usually attacks animals but once in their lifetime; but cases of repeated attacks are not unfrequent; and, upon this account, farmers and others have resorted to inoculation, the propriety of which is still questionable. The history of the disease dates as far back as two hundred years ago; but authentic records have not reached us during the whole of that time which denotes accurate observation. Since that time the ordinary movements of cattle from east to west, induced by the conditions and circumstances already named, have conveyed the disease from one dominion to another upon the continent; and each has suffered in its turn, not once, but repeatedly, and from which all but Holland and Britain have profited by the experience thus dearly paid for. The earliest records we have of its importation to Britain are in 1830, when it plucked the three kingdoms into dismay by the rapidity of its propagation from town to town; and, since that time, we have experienced repeated visitations, exhibiting different degrees of malignancy and fatality, particularly during the years 1852-4-5, '62 and 64—that of 1862 being probably the most remarkable. I now turn to a consideration of

D. — Small-pox in Sheep.—This affection was not seen by our veterinary surgeons in Britain before the year 1847, when it was imported from the coast of Denmark, or from Hamburg, probably also from Spain, and led to outbreaks at Datchett, near Windsor; at Woodhall, near Pinner; and Kingsbury, Middlesex. Annually, extensive outbreaks occur upon the Continent, which are more or less aggravated by the trade carried on, and calls for extensive movements of sheep towards the ports of embarkation. Russia, Prussia, and Austria probably suffer most. Greece is seldom free, and Germany, Hanover, and Saxony have but occasionally suffered, while Holland, Belgium, and particularly France, in consequence of the large importations annually made, have become powerful centres of the malady. In Prussia it is said to be stationary, and travelling westwards to Holland, we have received it from thence. It has proved fatal to the extent of 20 to 40 per cent. in France, while in England the mortality amounted to 50 per cent.; and this may be looked for under the conditions which characterise these epizootic affections when removed from their native soil. We have but imperfect records in reference to this affection, but from what has transpired we may not be unreasonable in believing that small-pox had visited England. Since 1667, when the first accounts were written, outbreaks of more or less intensity have occurred over the continent, from which scarcely a nation has not at some time or other suffered. Spain and Portugal have had cause for regret that Africa offered such facilities, by its close proximity, and that affected sheep had crossed thence by the Straits of Gibraltar. Small-pox is perpetuated in some countries by the practice of inocu-

lation, which is conducted yearly, in order to lessen the severity of the disease in the locality. It is by animals leaving these flocks so treated that disease is distributed. Sheep-pox is known by various appellations. Its technical language it is termed "variola ovina," and "small-pox" in the vernacular.* It is a malignant and specific variolous fever peculiar to the sheep, and occurring but once usually in the lifetime of the individual. It is rarely communicated to other animals, but when it does occur it is marked by mildness and evanescence. Sheep-pox spreads rapidly by contagion and infection; and from frequent observations, it has been decided that a healthy flock is not secure from its attack if not beyond a distance of 500 yards from affected animals. Like the poison of cattle plague, it may be conveyed in the clothes of persons, fodder, by the skins of animals, in hair, wool; dogs, game, and vermin generally may become carriers of contagion. In pastures, stables, and railway-trucks—in fact, wherever diseased sheep are allowed to go—the virus is left behind and communicated to all of the same species which follow. Where it is the practice to house the sheep a heavy mortality occurs, which increases to an alarming extent where over-crowding takes place. It spreads rapidly in a flock, and few escape; while the major portion die under these conditions, which are considerably modified when the animals are allowed their liberty, by which actual contact is lessened. Sheep-pox is characterised by a period of incubation, which may vary from a week to a fortnight; during this there are no signs of disturbance, and the animal comes under the head of "infected." Certain conditions tend to modify this incubative stage and delay the appearance of symptoms. When the disease is induced by inoculation, the earliest manifestations may occur by the third or fourth day, but may be delayed to the end of some weeks. Hot weather and confinement to close and warm situations eminently favour their development; but cold, exposure, and other conditions conducing towards a healthy tone of system will retard them, and delay appearance until the fifteenth or even twenty-fourth day. The first symptoms are those of illness, succeeded by febrile states; this is the period of invasion. The skin, particularly those but slightly covered with wool, exhibits "a flea-bitten appearance," each spot becoming more inflamed and enlarged, and forming what is called a papula. This is the eruptive stage. The papule become elevated and transparent from the eighth to the tenth day; are filled with a clear liquid, which speedily becomes turbid, denoting a change from the papular to the pustular stage. The swelling is white in colour at first, but with the changes just noticed assumes a yellow, opaque appearance, and the surrounding parts are pale. Shortly the elevation becomes more diffuse and the pustule dries up, over which a scab is formed, which when it falls off, exposes a depression in the skin. The constitutional symptoms run very high at times, in accordance with the amount of eruption which takes place. In these cases the papules are very abundant, and unite—a condition which is termed "confluent." The eyes discharge a purulent secretion, they are bloodshot, and intense thirst tortures the poor creature. The breathing becomes quick, discharge also flows from the nostrils, the mucous membranes assume a blue appearance, breath becomes foetid, and, with the cutaneous exhalations, is unbearable. These symptoms suffer modification or aggravation, and the animal dies about the eighth day after the eruptions appear, but before the formation of lymph has taken place. It may, however, occur earlier or later; and mild cases which are limited to slight fever and rapid transition of changes, may exhibit approaching convalescence in three days; other cases are delayed for a month. Irregular forms are observed, such as the non-appearance of eruption. The fever is intense, strength gone, internal swellings take place, and profuse diarrhoea carries off the animal. The mucous membranes become the seat of the eruption, especially those of the respiratory and digestive organs, when imminent danger of suffocation is manifest. The animal breathes through the mouth, and the tongue is protruded. Sometimes disease affects the joints, and the hoofs slough off, and the healing of wounds becomes difficult if the scabs are too precipitately removed.

* It is the schafpocken, schafpockenseuche, and schafpocken of the Germans. In France it is known chiefly as clavel or clavelé, but rugeole and picotte are terms also employed to denote sheep-pox. In the Italian language it is called vajuolo pecorino.

other times the vesicles fill with blood, or they become receptacles for gaseous accumulations, which result from the process of decomposition analogous to that which is found in cattle plague and other malignant affections. The post-mortem appearances are somewhat as follow: The body is considerably swollen from early decomposition, and gives off a very fetid odour. The eyes and nose are usually closed by dried discharges and the scabs of pustules upon the lining membranes, which, with the skin and other affected parts, exhibit the characteristic eruptions. If the wool has not been detached during the intolerable itching which occurs before death, it easily comes off on the application of force, or absolutely falls off. Vari or nodules occur in the skin and all parts of the body, and are readily seen during the removal of the integuments. These are characteristic, and serve to form a sure guide to the affection when other parts of the body are absent. These nodules or vari also occur upon the mucous membranes which line the digestive tract. Sometimes they assume the character of yellowish or red spots, and at others ulceration has progressed to some extent. Besides these, the tissue beneath the skin is infiltrated with scum, particularly of the extremities, and the lymphatic glands are enlarged, inflamed, and covered with red spots. The treatment of *Variorum* in all parts where it is introduced has been attended with results no less mortifying than that of cattle-plague. Like all other epizootic affections, it has no home in this country, nor is it ever likely to arise spontaneously here; and as certain as it has been proved to be of foreign origin, malignant and highly contagious, as certain we are of the fact that it will not be cured by medicines. No remedy has proved of service in cutting short the disease; but, on the contrary, while affected animals are allowed to live among a flock undergoing treatment, they are breeding and distributing a poison all around. There are few animals insusceptible of sheep-pox, in most instances the mortality reaching 80 or 90 per cent.; and, while inoculation has the tendency to lessen the severity of the disease, the proceeding proves highly favourable towards reducing the country in which it is practised to the condition of a small-pox manufactory. Proprietors of animals suffering from such malignant fevers are naturally sensitive and jealous regarding the welfare of the number, and acting upon the representations before them, which appear most conclusive—the safety of the whole depending upon a reduction of the severity of the malady—cling with hope to the inoculation of each as a protection. In a country such as this, inoculation or ovination is not a wise proceeding. Although the severity of the disease is mitigated in the animal which has been inoculated, the malady is still contagious; and it has been proved in the case of the Wiltshire outbreak in 1862 that the proceeding was the cause of greater losses, and perpetuating as well as spreading the disease. Vaccination has not been proved to be available as a prophylactic. We are in a similar condition with regard to all epizootics which are governed by general rules, and when understood and applied are much more valuable than the useless administration of drugs or the philosophical communication of poison from one animal to another. There has been such an amount of apparent mystery hovering around these diseases that agriculturists have gained no confidence in any proceeding which differs from those just named. The study of the diseases themselves has not been embraced as it should, and information regarding them has been confined to few persons. Practical acquaintance with the physical signs of each could not be obtained, as a veterinary surgeon did not think of going abroad to study symptoms of diseases which he did not expect would visit our shores. When he turned over the pages of his text-books, he came across a strange admixture of literature in a book eminently intended to sell, and left it with a mind certainly not enlightened upon the subject after which he thirsted. It has happened that some of these works, which now and then appear as popular editions—"revised, corrected, and to which numerous illustrations and additions have been made" (on each occasion by a fresh editor)—instead of proving a compendium of useful knowledge, are but a series of contradictions of the previous compiler, and a successful attempt at rendering confusion doubly confusing. In a work of this kind, which has already gone through three or four editions, I observed some of our local diseases placed under the head of "Specific Affections," and others mild in their character, and non-contagious, included under the term

epizootic or epidemic, while some of the acknowledged malignant affections received also a foreign classification. It is thus information has been wanting, and when plagues roused us from our lethargy, we were unprepared. In an emergency like one of these, any information is gratefully accepted, and that which holds out the least shadow of hope for success is a godsend. Such thoughts have pervaded the minds of many, while the real secret of the prevention of widely-spreading plagues has been unobserved or falsely estimated. By the early segregation of animals in which the earliest symptoms of disease are manifest, its communication and propagation in a flock or herd may be prevented—that of cattle plague, probably, affording an exception in some cases. It should be the aim of proprietors at once to determine the nature of the malady they have observed, and this will enable them to arrive at some definite conclusion as to the disposal of the remainder of the stock. There has been too much prevailing the disposition to pay for physic and spurn advice, and this has paved the way for carelessness and quackery. The only sure way to cultivate veterinary science in the manner it deserves is to make it the medium through which the safety of the source of Britain's wealth shall be secured, and I will vouch for the faithfulness of its mission. Next to separation of affected animals and determination of their malady, is to watch with a jealous eye the rest. Cull out all new arrivals from the old stock, and, if possible, adopt a system of segregation and quarantine throughout, proportionate to the disease. Where this is impracticable, prevent all intercourse between healthy and unhealthy animals, and adopt the most approved measures of disinfection and fumigation, as far as possible. Secure the putrefaction and decomposition of excrement, litter, hides, and offal of animals dying of, or slaughtered on account of these diseases, by prompt and effectual burial. In the case of cattle plague and small-pox, I unhesitatingly say it is the more wise proceeding to sacrifice a few animals at the outset, than endanger the whole for the purpose of adopting measures which prove worse than useless. In the case of pleuro-pneumonia and vesicular apthia, by timely separation, fumigation, &c., whole herds have been saved. It is after the disease appears in one among a number of animals, and no care of this kind is taken, that wholesale slaughter is inevitable, and preventive measures of no use whatever. After disease of an epizootic character breaks out, instant removal of the unsound one is imperative, otherwise no fumigation or disinfection will stay its progress. Yet thousands of pounds were spent two ears ago in this manner. Hundreds of cattle were treated in houses where healthy cattle remained, and thus one lived to commit murder upon his neighbour. I can only repeat, in conclusion, that agriculture and veterinary science will never arrive at that point which the condition of Britain requires until they go hand in hand together, and reduce to a minimum the ravages which, in our intercourse with foreign nations, occur in our home stock from the present system of importation. Let it be insisted that if our requirements compel the introduction of foreign cattle, that they are selected from healthy countries, and reach us with clean hides and sound bodies. Let our agriculturists see that when store animals are brought under conditions of a questionable character, they are tested properly by a quarantine before they travel our roads or enter our railway trucks. Let them also be as one man in this respect, and unite for the welfare of the body. It is a mistake to withhold information of the outbreak of disease; the hand of science is paralysed, and can offer no good at the eleventh hour; besides, the statistics of diseases are lamentably imperfect, a fact which no one has to deplore more than he who suffers in consequence. Although reliable statistics are wanting, we may estimate the number of cattle nearly as follows:—

In 1854 it was estimated * that in England	3,422,165
and Wales the number of cattle amounted to	
Scotland (latest statistics, 1857)	974,437
Ireland (statistics, 1862)	3,250,396

Total horned cattle in the United Kingdom ... 7,646,998

If these are valued at £10 per head, we should have represented in horned cattle alone the sum of £74,069,980. Of sheep we have about 40,000,000 which represent as many pounds sterling; and of pigs we number within a fraction of

* Parliamentary Paper.

5,000,000, which should be worth £1 per head. All these calculations—and, doubtless, they are rather below than above the actual number—enable us to estimate the net value of £119,069,980. And this is the substance which we expose to the mercenary attacks of foreign plagues, almost hourly, by our system of free trade. Surely, the stock represented by these figures—unequaled in the whole world—is deserving of attention. But how have we conducted ourselves as conservators? In a Parliamentary paper I find the following:—"Very startling results are obtained by calculating the losses this country has sustained since the importation of cattle and of contagious diseases. The most recent statistics of mortality to be relied on are those of Scotland for the year 1860, which, on taking the average amongst stock of all kinds, amounts to 4.89, or nearly 5 per cent. If in 1860 the whole of the United Kingdom had (as I believe it at least to have had) the same rate of mortality as Scotland, in that year there died of disease in Great Britain and Ireland 374,048 horned cattle, having, at the average value of £10 3s. 6d. per head, a total value of £3,805,939 8s.; and if the Mid-Lothian experience of the causes of death be applied to this matter, we may infer that more than one-half the loss was due to pleuro-pneumonia. The number of cattle imported in 1860 was 104,569, and their value (at £8 per head) may be estimated at £836,552. It will be thus seen that the number of cattle estimated to have died by disease was 3.57 times the number imported in the year, and that the estimated death from pleuro-pneumonia were more than 1.89 times the number of cattle imported. Taking the estimated values, we find that the entire deaths from disease represented 4.5 times the value of the cattle imported, and that the deaths from pleuro-pneumonia represented considerably above twice the value of these imports. As one year cannot be considered a sufficiently fair estimate, we may give the calculations of the six years ending 1860. The average annual loss of cattle in this period is estimated at 4.915 per cent., or over the whole at ock of the three kingdoms to be 375,850. The estimated total for six years amounted to 2,255,100. The value of animals lost amounted, at £11 10s. per head, to a grand total of £25,934,650. Of this number there died, from pleuro-pneumonia, considerably above one million during the six years, and these represented a value of about twelve millions sterling. The number of cattle imported during six years ending 1860 was 553,033—their estimated value, at £8 per head, £4,424,264. The loss by disease was four times the number of cattle imported, and by pleuro-pneumonia it exceeded twice that number. The average annual losses among sheep amount to "not less" than

4 per cent. In Ireland it amounts to 5 per cent., and exceeds this in Scotland. The money value represented by the deaths over the whole kingdom is, therefore, not less than £1,600,000. Among pigs, in Ireland, there is a loss of at least 10 per cent. on these animals. In Scotland the loss is small, and the mortality is not very great amongst them in England, as compared with Ireland. I cannot, however, estimate it at less than 3 per cent. over the three kingdoms. This would give a loss, in round numbers, of £1,209,000 sterling. Thus, the deaths among stock in the United Kingdom probably represent an annual amount of more than six millions sterling, and to this I may add, from *preventible diseases*. Among town dairy cows the losses amount, from pleuro-pneumonia alone, to 50 per cent.; and yet dairymen have prospered. A comparison of the following figures is not without interest. During the visitation of the cattle-plague in 1865 and 1866, there died, or were slaughtered, in Glasgow 763 animals, representing a loss of £8,987 10s. This was the result of one year's experience of a deadly plague. From other diseases which have been spread over seventeen years there have been lost 3,759 cows from pleuro-pneumonia, and 1,594 were sold in consequence of being incurably affected. The value of these is estimated at £54,677. One dairyman asserts he has lost animals annually to the amount of £300 for years. From "murrain" a loss of £7,314 occurred; and from puerperal fever, £7,021 9s.; yet these are not the accurate details, which amount to considerably more. In Glasgow there are 224 dairies, and the average period of operations amounts to twelve years, among which the annual sum of £5,166 must be divided for the purpose of representing the losses which have taken place. I think it must now be evident that, although we have not cattle-plague continually with us, there are two other maladies which are productive of serious, and even greater, losses, and these are stationary. If the cattle plague came but once in a century, we might rejoice at no greater loss than three millions of money, provided we were also free from others. But it costs us now, independently of the plague, six millions annually, three of which are paid by Ireland, to feed up animals for a yearly sacrifice. It must be remembered that at least one-half of this sum is lost by pleuro-pneumonia, another proportion by murrain, and a third by small-pox in sheep—foreign diseases, which may be exterminated and denied admittance to our soil by proper regulations. But our domestic animals also suffer from other—and in the majority preventible—affections, which belong to ourselves and our system of management. What these are I will attempt to show at another lecture.

ON SHEPHERDING.

At the dinner of the Boroughbridge Agricultural Society, Mr. THOMAS SCOTT, the SECRETARY, delivered the following address:—"I have arranged my subject so as to form a shepherd's calendar as applicable to this county, in which shape I thought it might be most acceptable, and which I have endeavoured to make as definite and simple as possible. As the characteristic qualities, the varieties of breeds, and the diseases of sheep might form subjects for our future consideration, I shall confine myself to-day to a few notes on the management of sheep, and shall feel gratified if my remarks should excite argument and afford material for discussion. I begin with the year. During *January*, the breeding ewes ought to have a plentiful supply of roots, in order to give them full condition prior to lambing; for although it is argued by many that with ewes in a fat state a greater loss is sustained from deaths, I am inclined to think quite the opposite, and that ewes when full in flesh are much more equal to combat difficult cases of parturition than when emaciated and lean, in which latter state they often sink. Fattening sheep and hogs are now fed on out swedes with more or less artificial food, as they are intended for early maturity or otherwise. *February*: Although it is highly advisable to have ewes full of condition when they lamb, it has been proved that, if they are fed on roots exclusively up to that term, the offspring is weak and delicate; it is, therefore, prudent to remove them to grass, and gradually

diminish the supply of roots up to weaning, and substitute, say a little cake, corn, malted corn, &c., any of which appear equally to tend to develop the foetus, and, therefore, that which is cheapest may be selected. *March*: In a large flock a few cases of abortion generally precede the lambing season, which is not much to be feared, as in the ewe, unlike the cow, this casualty is not at all contagious, although the same cause may be productive of several cases, which are such as fright from dogs, jamming, forcing through gateways, &c., all of which ought to be studiously avoided. Rare instances of prolapsed uteri, too, occur prior to lambing: these cannot be avoided, but a skilful and attentive shepherd in the majority of cases delivers the ewe with impunity. Erect shelters in different parts of the paddocks, fields, &c., into which young lambs have to be turned by placing hurdles in the section of a V, and fill them with straw or litter; these form a protection against the sharp winds which may prevail, and which are so productive of those fatal attacks of crook. About the third week in March is the best time for ewes in this backward district to begin lambing. Having been marked in rotation as they took the ram, those which are due first should have close attention, and, if convenient, should be put during the nights in an airy house or yard with shelter, and be seen at intervals of an hour or so. In cases of difficult parturition let nature guide the shepherd, who should note the following, viz.:—Allow ample time before res-

dering assistance, and never attempt to extract a lamb without first having placed it in a natural position, which must be done patiently, cautiously, and dexterously. When much handling is resorted to, use black oils to prevent gangrene. If the ewe appears debilitated, give gruel with brandy or other stimulants with gentle purgatives. An efficient shepherd will not have triplets or pets, but will mother a third, lamb or one which may have lost its mother, upon a good nurse which has but one lamb. In cases of straining from after-pains give laudanum and castor-oil. The stock of roots intended to be eaten on the land upon which they grew should be so calculated that they are finished by the end of this month, so that their presence does not interfere with the operation of sowing the land with barley or other spring crops. Then arises the question where can the remainder of the roots be most advantageously consumed. I have tried three experiments, viz.: Firstly, on old sward, the result of which was that there was no marked improvement in the yield of grass, and unless folded and frequently changed the flock became almost simultaneously lame from inflammation which ended in foot-rot. Secondly, on land intended for a root crop, with much more favourable issue than in the previous case, and where the breaks were littered with straw, a good crop of turnips followed, but they were much more unsound than others grown and manured in the ordinary way either in winter or at the time of sowing. Thirdly, on wheat, the results of which I have found most satisfactory, but which, by the way, should be grown studiously for this object, viz., on light soil, and, if not, upon poor land after say oats or barley, the latter I prefer. In this case the fold should not be too large and the flock removed once a day. April: My notes for the foregoing month with respect to ewes apply also to this. In case of twins where one lamb is stronger than the other, muzzle it at short intervals, so that the weaker one may have its share of milk and consequently become a match for his fellow. In fine weather dock, castrate, and flock-mark the lambs at from three to six days old; house for a couple of nights; apply paint on the necks of the twin lambs, as a safeguard from foxes, and turn away the ewes with singles into an ordinary pasture, but those with pairs should have a good pasture, or in addition to a middling one be allowed mangolds, a little corn or cake mixed with chaff, maltculms, &c. During this month a great saving in wool is effected by keeping the ewes free from doddings which the young grass necessarily occasions. Mangolds often form part of the food of the sheep during this month, and they may be given with impunity to ewes, but not so with males, for when given *ad libitum* they cause an accumulation of sandy matter in the region of the bladder, which, if not quickly remedied, soon terminates in death. May: Ewes with twins should have cake so that the lambs may acquire a taste for it, and when they begin to eat it freely, it should be given in an enclosure into which the lambs only have ingress. In this month summering or pasturing may be said to commence, and I will here urge the necessity of frequent change of pasture, and where the flock or a portion of it occupies but one field of clover, &c., it ought to be divided so as to admit of change so natural and beneficial to animals of the sheep kind, in which change appears to be an innate principle. Water, too, especially to ewes giving suck, is indispensable. Rock-salt ought to be placed within reach of sheep all the year round, as it tends to keep them healthy. Too much cannot be said against early clipping, the disadvantages are so great and the advantages so small, especially in this cold climate. Why should we be the first to divest our heap of their clothing, when it has been proved that a sheep will, when shorn in cold weather, lose several pounds of flesh every week? and by this injudicious practice ewes giving suck are almost deprived of milk. I presume that such folly is kept up because in this district is held the first wool fair of the season. June: The flock throughout should now be dipped, to secure the destruction of vermin on the skin, whilst the wool is short; amongst the numerous compositions used for this purpose, I have found the glycerine to answer best. About the end of this month lambs may be weaned, when a better pasture can be afforded them, and they rest and fare better than with their dams. Cast ewes are now put on good pasture, with cake, &c., and forced as quickly as possible, so that when ripe they can be mixed off with a parcel of young heep, and consequently fetch a higher price than when sold as ewes in one bargain. Stock ewes from this to the beginning of October should perform the office of field scavengers,

by cleaning up all over-eaten pastures, paring down any rough swards, &c.; should be laid rank on the ground, and cost very little in keep. July: In woody districts flies are now very troublesome, and their constant teasings interfere much with the quietude and well-being of the sheep. The flock, therefore, during this and the rest of the summer months should occasionally be closely packed in a pen, and have a sprinkling of a mixture of sp. tar and sulphur from a garden watering-can, and their heads dressed with a similar mixture of thicker consistency, which is less heating, and therefore preferable to caps. These applications will ward off the flies, and contribute materially to the animals' comfort, and leave them to graze in peace. During this and the following month lambs require the especial vigilance not only of the shepherd but of his master, for it is a difficult matter, in the absence of a second crop of clover, or some such luxurious herbage, to keep them progressing and healthy up to the time of placing them on turnips, and too much attention cannot be paid to the pasture, change of food, &c., for a few days on an over-greasy old seed or pasture field may cause scouring, and otherwise so derange their weak and sensitive stomachs that months may elapse ere they again begin to thrive, and even serious losses from death have too frequently resulted from this and kindred causes. August: Stock ewes should now be upon inferior pastures, and cost as little as possible. As pastures, whether permanent grass or clover, now deteriorate in quality, feeding sheep should have a little extra artificial food, and also frequent change of pasture. Lambs ought now to be placed on clover or grass aftermath. During the busy season of harvest the flock too frequently is neglected, and should therefore be dipped just prior to the commencement, in order that there may be less risk of maggotting and loss of condition from fly-teasing. September: Feeding sheep and lambs should now be put on turnips, some of an early sort having been provided for them. It is customary, and strongly advocated by many flockmasters, that roots should be cut from the first day. Now, after frequent tests, I have found that on white or other soft sorts it is as well to let them gnaw the turnips, for in this way they sooner acquire a relish for that which they at first have a decided dislike to. October: So that lambs are not dropped before there is a promise of grass—say the third week in March—the ewes ought to receive the ram about the third week in October, a fortnight both prior to and after which they should be allowed a liberal supply of rape, mustard, or roots, so that they may be in an improving condition, which will ensure a heavy crop of lambs; and I think this is further secured by "stocking," which is at all times safe and economical. As so much diversity of opinion exists as to the most profitable and suitable breed of sheep for this district, and as our subject does not deal with the breed, but with the management of sheep, I will not venture on this head, but merely add that, after upwards of twenty years' experience, during which time I have tried several distinct breeds, I have found upon my farm that Leicesters can be laid much thicker on the ground—a much greater quantity of both mutton and wool to the acre than any other breed. The only drawback that I have observed is that they are light milkers, and therefore not adapted for purposes of selling lambs off fat to the butcher, or as stores in autumn. November: Assuming that the soft turnips are finished, and that the feeding sheep and hoggets are now on swedes, which during this and the following months should be lifted, and that portion which is intended to be consumed on the land should be pitched or carted into small conical heaps of about one-and-a-half ordinary cart-loads each, formed at equal distances—i.e., if the land is of uniform quality throughout the field; but if the soil should vary materially, then the heaps should be dispersed, with due regard to this, so that the succeeding grain crop should vary as little as possible; and if cake or corn is given, the troughs should be placed on the poorest part of the field. In storing the root-crop, the distance at which the rows of heaps should be placed ought to be regulated by the magnitude of the flock, so that they pretty well occupy the distance from row to row, and the straw which has covered the preceding row of heaps should be nicely spread over the ground on the opposite side of the break to that on which the troughs must, for the sake of convenience, necessarily be placed, in order that that portion may be equally as well manured as the opposite side. In the days of cattle-plague, when it was a difficult matter to get straw converted into manure, I used that article

liberally for littering the breaks, with great advantage to the succeeding crop. Whilst on this subject, it may not be out of place to allude to the practice of wintering sheep in yards, although the system seems somewhat unnatural. When, unfortunately, obliged to adopt this plan, I found that sheep were disinclined to leave the yard when allowed to do so, that they consumed much less food than when in the fields, and that they made mutton rapidly; but the great objection to this course was the difficulty in keeping them sound. Manure made under sheep is of uniform and superior quality. *December*: The treatment of the flock generally will not differ much from that of last month. The ewes may be allowed to range over sward land, now cleared of roots, and feed upon the tops, saving the expense of carting, which at all times looks to me injudicious management. During stormy weather, give cotton or rape cake, whichever is cheapest, for I have found them of about equal value for feeding or milk-producing purposes.

Mr. CLARK said: Mr. Scott, it was well known to all present, was a very experienced, intelligent, and painstaking flockmaster, and he had offered some valuable suggestions connected with sheep management at the most difficult periods of the year. He agreed with Mr. Scott relative to giving to sheep water and rock salt, which had a beneficial tendency. Mangolds were good for sheep, and they were calculated to increase the quantity of milk.

Mr. WALBRAN stated that in several instances he had found that the folding of sheep upon grass land had very much improved such land.

The Rev. C. H. SALE wished to ascertain whether Mr. Scott would apply the same kind of treatment to Leicesters as to other breeds of sheep, the north moor sheep, the Lincolns, and the Shropshire Downs, and whether a difference in the breed of sheep called for a difference in their treatment. He came to that neighbourhood from the midland counties, where in many good farms the quantity of grass land was more than arable land, and consequently the treatment of sheep was less artificial. In districts which were not so favourable in this respect it was necessary to study the habits and physical condition and constitution of the animal, and to gain possession of facts and information by experience and experiments in order to arrive at the best mode of artificial treatment, so as to bring the sheep as near as possible to its natural state and perfect condition. He wished to know if Mr. Scott would apply the same treatment in that district to all kinds of sheep.

Mr. SCOTT was of opinion that Leicesters and Lincolns were in some respects identical, and their treatment should be the same. As regarded Southdowns, which had lambs in January, they ought to be housed in the same way as in the south of England. In the north the farmers laboured under

disadvantages which they in the south did not, and greater care had therefore to be exercised in the management of sheep. The Southdown sheep were more adapted for the south of England, the climate being warmer and more suitable for them. In the north it was necessary that this description of sheep should be more housed and better nursed and cared for.

Mr. OUTHWAITHE considered that every flockmaster with a certain number of sheep should keep a shepherd to attend to them, as such a man would earn more than his wages by saving many animals, which, except for such attention, would be found dead. Any good and useful man so employed would more than save his wages in sheep alone. It might be thought that a man employed in looking after sheep only was loitering away his time, but in his opinion all the time spent in this way was well spent. He quite agreed with everything that Mr. Scott had brought forward in his lecture (Hear).

Mr. SCOTT said that he was decidedly an advocate for the views held by Mr. Outhwaite, and more particularly so in northern districts, where a permanent shepherd was necessary. A permanent shepherd might have an idle day now and then, but as a man fulfilling the duties of a situation of that character must be naturally fond of sheep, and take a lively interest in the animals under his care, he would always be looking after and attending to the well-being of his flock. A good shepherd would feel as much interest in the sheep as the master himself (Hear).

Mr. BAINBRIDGE said that he had given his sheep cotton cake and rape cake. He had found cotton cake to be as astringent, and he had therefore mixed it with leust beans crushed.

Mr. SCOTT said that roots and rape cake would go together with advantage.

Mr. CLARK intimated that when he had some sheep undergoing the scour he did not find cotton cake an astringent, and he used some of Wood's mixture, which was a very good tonic.

Mr. JACOB SMITH showed that large numbers of sheep went amiss for want of good shepherding, and that a really good shepherd, who attended to and understood his business, was a valuable man upon a farm. If sheep were properly shepherded there would be far fewer animals attacked with scour than many people would be led to suppose. If a shepherd kept his eyes open, and looked well after his sheep, they would not go into the scour. This attack was owing to wrong food being given to them, and he gave an instance of some sheep being scouring in consequence of being put upon wrong food. They were much indebted to Mr. Scott for his valuable and very instructive lecture, and he had to ask the company to drink that gentleman's good health.

THE APPLICATION OF LIME.

At a meeting of the Staindrop Farmers' Club, the following address was given by Mr. MORLEY HEADLAM, who said: The use of lime in agriculture is almost coeval with agriculture itself, and is indeed the basis of all thorough agricultural improvements, for, without a proper admixture of lime, no soil, however rich in vegetable and ammoniacal matter, can produce either the quantity or quality of any crop which it is capable of doing when a judicious application has been made. The question of—What is a proper application in quantity and quality? is what we have now to try to solve. I have heard it asserted that lime does no good whatever, and very often is really injurious to land; but from this I certainly do most entirely differ, both from all I have read on the subject, and from my own experience. There certainly are cases where lime has been so frequently applied to soils in a very poor state of cultivation, as a substitute for manure, that all vegetable and organic matter has been extracted, and nothing is left for the lime to act upon to produce food for the plant. These cases are, however, extremely rare, and I cannot say that any have ever come under my own experience, as all applications of lime I have ever made or seen made have been productive of greater or less benefit to the land for many years. I think it is now fully established by the best authorities, that lime is not to be regarded purely and simply as a

manure to be applied at any time, and in any quantity, which can be reasonably obtained, to the production of a particular crop; but as an alternative to render the vegetable and organic matter existing in the soil, either naturally, or by the addition of farmyard and other manure, soluble and fit for the nourishment of plants; for this reason it seems to me that lime should never be looked upon as a substitute for manure, but that the land should be kept supplied with just sufficient to render all manures fully available. We will now consider what quantity and what quality of lime it is desirable to use to arrive at this result, more especially with reference to lands in this county and in the North Riding of Yorkshire, with which we are most acquainted. There is a large quantity of grass land, or so-called grass land, in these districts, to which no lime has ever been applied, and which has almost been entirely neglected for a great number of years. A great deal of this land being saturated with water has only grown a sour, coarse herbage, which stock refuse to eat, unless absolutely compelled to do so, and which, if they do eat, does them very little good. Much of this land is, however, being rapidly improved, and the first step to be taken is to get rid of the water by thorough drainage; the next is to give a liberal top-dressing of lime, and in this case I think the first application should not be less than six or seven tons per acre,

and the best mode of application is to place the hot shells or clods of lime in small heaps of about ten or twelve to a cart load, to slake it, and to get it spread on the land with as little delay as possible, in order to get the full benefit of its causticity, so as to destroy the rushes and bents, and noxious vegetation which has been generated by the water so long stagnant in the soil. The result of this will soon be apparent in a closer and sweeter vegetation, which the stock will readily consume. Some people, in such a case, would advocate even a heavier dose than I have mentioned; but I am inclined to think a repetition of it, or a smaller quantity, say four or five tons, after an interval of three or four years, when the land has begun to break and the sod is level, would prove more beneficial. There are some districts of this sort of land where there is an abundance of limestone, but where coal is very distant, and the cost of burning therefore very great: similar results can be obtained in these cases by a liberal top-dressing of crushed limestone, or even by the *debris* and rubbish of a limestone quarry; but the improvement, though equally permanent, is much more tardy. In any moorlands, or unimproved lands that have never before been limed, and may be broken up for tillage, I should also recommend a large dose in the first instance, such soils being mostly full of inert vegetable matter, and the lime hastens the decomposition of the sod, and has a great effect in destroying wireworms or other noxious insects that frequently appear in such cases. On tillage lands, in regular course of cultivation, that have been previously limed, I think it is most essential a farmer should ascertain, supposing he has never limed the land himself, how recently, and in what quantities his predecessor has used it, or better still he should ascertain, by some analysis, what quantity of lime there is in the land, and then apply such a dressing as may seem necessary to restore the proper proportion to the soil. My own feeling is that a moderate quantity—say five or six tons an acre—applied at intervals of eight or nine years, is safer and more beneficial than a heavy dose more rarely; but as I said before it should be as an assistant to and not as a substitute for manure; for the more manure of a vegetable and ammoniacal nature you are able to apply to your land, in the intervening years, the more benefit will you derive from the lime. I do not consider it, desirable, however, to apply the lime at the same time as the manure, or even, if it can be avoided, in the same year; for lime, if it comes into immediate contact with farm-yard manure or guano, too rapidly liberates the ammonia for the soil to retain it, and there is therefore a risk of some being lost. There are few crops which are not improved greatly in quality by the application of lime, but I think upon the whole that wheat is the crop to which, especially on clay lands, it is most beneficial. I have certainly myself seen on fallows, where some portion has been limed, and the remainder had a good dressing of farm-yard manure, the limed portion has produced both a heavier crop and a better sample of wheat in the following year than the other. I have some difficulty in deciding in my own mind which is the best mode of applying lime, before a wheat-crop. I think it is really best on a bare fallow, but then in a properly drained and properly farmed country we do not want any *bare* fallow. It is very desirable, in my opinion, that the lime should be applied in as fine a state of powder as possible, and be lightly ploughed in, well harrowed, and mixed with the soil, as dry as the weather will permit, and to effect this (failing the bare fallow) it is best to apply it previous to the turnip-crop; but the difficulty in this is that the time for getting it on is very limited, and there is a risk of delaying the sowing of the turnips, also if the weather prove very dry afterwards, the young turnip-plants may suffer. The lime too, in this case, comes too immediately in contact with the manure applied to the turnip-crop. I am inclined to think that the best plan of applying lime to a wheat-crop is on a bean or pea-stubble, the lime having been prepared ready for use by being laid up in heaps of three or four loads in each heap, during the summer or early autumn previously, which heaps should be lightly covered with sods or soil as soon as the stubble has been scarified and cleaned as much as is necessary, or as the season admits of, the lime, which will then be in a state of fine powder, should be spread from carts evenly over the surface; the land is then ploughed, and the wheat sown either with a drill or on a seed seam formed by using the land-presser. The lime in this state will be ready to act on all manures previously applied to the bean crop or preceding turnip crops, which may be still inert in the soil; and when after the wheat crop the

land is more deeply ploughed for the succeeding turnip crop, the lime is to a certain extent thrown back more to the surface, and being afterwards well worked into and harrowed amongst the soil, the latter is fully prepared to receive any manures that may be applied for turnips. It is well known that lime has a tendency to work down deep into the soil, and especially if the land is undrained. It is therefore desirable, after applying lime, to plough it in rather lightly at first; and afterwards to increase the depth, and by a good deep furrow, to throw it again more to the surface. If the same depth is always maintained, and lime is very constantly applied, it will form itself into a state of mortar almost, just below the plough sole. Dr. Bell, in his report on the agriculture of the county of Durham, quotes a curious instance of this, where a man "was used to plough the usual regular depth, which his grandfather had ploughed, and he never went below; consequently, in the course of years, the plough had worn itself a pretty hard road on the top of the subsoil, at the poor man's regulated depth. He was much surprised that all the lime he laid on never seemed to increase his crops in a similar way as those of his neighbours. At length the mystery was cleared up; for one year, venturing a little lower than usual, he turned up a thick layer of lime, almost in the condition in which he had laid it on." I have noticed a practice much increased of laying a top-dressing of lime on to clover stubble before ploughing, either in the autumn for wheat, or in the winter for oats. I have never yet tried it myself, but it seems to possess advantages as affording a convenient season for applying the lime, and also for working the land after the crop in the same manner I mentioned when following beans or peas. I think also the lime would act beneficially in decomposing the roots, and any other portion remaining of the clover and ryegrass which may be ploughed in; and I think that on clay soils especially we cannot use a better manure to wheat than lime thus applied, with a considerable quantity of the clover for ploughed in. I should hope that some gentleman present who may have tried this mode of applying lime will give us the benefit of his experience. We are fortunate in this district in having an abundant supply of very excellent limestone, and the railway facilities generally are so great that very few farmers are unable to procure whatever description of lime they think best suited to their purpose, at a very reasonable cost. In all my preceding remarks I have presumed that we were considering the application of the lime burnt from the blue or mountain limestone, which is in almost all respects more useful for agricultural purposes than the magnesian, as it contains so much larger a proportion of carbonate of lime, which is the most valuable and essential portion, and which combines most readily with the vegetable and organic portions of the soil, producing the most healthy solutions and salts necessary for the use of plants. The magnesian lime has however some very valuable properties, being much more caustic in its nature, and where the object is to destroy noxious plants or grub and wire-worm, I think it may be used to advantage. Great care should however be taken in the application, as an over-dose of it may prove very hurtful to vegetation, especially on land containing much oxide of iron, or of sulphur, as the tendency would be to produce sulphate of magnesia, which is very injurious to plants, particularly to clover. I once used it myself with considerable advantage on a field which I had just thorough-drained, and which had been in bad grass for 8 or 9 years. It was ploughed out and sown with oats, and a considerable quantity of the crop disappeared during the spring from the effects of wire-worm and other grub, and the land seemed full of black roots and the remains of sour-looking grass. I intended it for turnips, and in the early spring gave it 3 loads of Morton or Summer-house lime (magnesian) per acre. The turnips came up well (they had 10 or 12 loads of manure per acre), and looked very blooming up to hoeing time, when the first alarm was caused by the arrival of a very large body of rooks, who took a line straight across the field, and pulled up all the singled-out plants, clearing some patches entirely. We investigated, and found here and there a wire-worm, but nothing to account for such wholesale destruction. We then singled the remainder of the field, and another flight of rooks made a similar raid upon us, and some other portions of the field were stripped. The turnip plants, apparently strong and healthy, were bodily pulled out, and laid on the ground. After this the rooks never again attacked us, but a few of the remaining plants turned yellow, and died off. I

should think altogether about half the crop was thus destroyed; the remainder grew remarkably well, and produced some of the largest and best turnips I ever had; also a small portion I had in mangel-wurzel, though thinned in the same way to a certain extent, produced some very good roots. The good size of these roots was not caused by the plants being set wider in consequence of this rough thinning, as the loss was in large patches being left quite bare more than the rows thinned out. I was afraid under these circumstances to risk sowing the land with barley, and having heard that a crop of potatoes was a good thing for stopping wire-worm, I set the whole field with them the next year, giving a moderate quantity of farm-yard manure. They were a very good, regular crop, and of very good quality, and the quantity quite equal to what I expected. In the autumn I sowed the land with white wheat, and had a remarkably good, clean crop, without a trace of wire-worm or grub of any sort. I sowed broad clover on the wheat, and had a most excellent crop the next year, with scarcely a failing plant; and the crop of oats after that was one of the largest I ever saw. I then had a crop of swedes, giving them about twelve loads of manure and 3 cwt. of superphosphate per acre. They were level and good, though the roots were not quite so large as before; but there has never been in any crop, since the application of the magnesian lime and the visitation of the rooks, any symptoms of the grub or wire-worm; but whether I have to thank the lime, or the rooks, or the potatoes, or all three, I am not quite prepared to say. The field after the turnips grew a good crop of barley, on which I sowed clover for pasture: the clover rather missed; but the ryegrass and other seeds made a pretty good pasture; this is now in its second year, and I am intending to give it five or six loads of mountain lime before ploughing it out either for wheat or oats. I regret not having done so previously to the last turnips or barley, as it might have been the means of saving the clover plant. I have mentioned this case to show that the magnesian lime may be occasionally employed with advantage, but it should be very rarely, and in very small quantities. The limes most used in this country, are the Boldron, Lane Head, Forcett and Melsanby in Yorkshire, and the Weardale or Frosterley and Stanhope in Durham (mountain limes). The general analyses of all these are very similar, as they contain from 90 to 95 per cent. of carbonate of lime, but they vary slightly, and the differences are often as marked in the different beds of the same quarry, as in the different quarries. I have never used any of the Weardale lime myself, but have always heard it very highly spoken of, and it seems by the analysis furnished to me to contain the largest proportion of carbonate of lime, being 95.1, and a small one of magnesia, being only 2.5. The Forcett limestone and two beds of the Boldron contain about 91.5 of lime, and the Boldron 2.0 of magnesia, while the Forcett has 4.11. The Boldron stone contains a larger quantity of silicious matter; but one bed of the Boldron is said to contain as much as 95.28 of carbonate of lime, the amount in excess upon the other bed being deducted from the silica. I have myself chiefly used the Boldron and Lane Head limes, as being most conveniently procured; and have always found them both succeed very well. I think the Lane Head Lime expands more freely, and when slaked produces more powdered or hydrate of lime in proportion to the unslaked lime than the Boldron, and therefore goes rather further; but I am quite sure that any of these limes may be used with the greatest safety and advantage for agriculture, and there is not sufficient difference in them to compensate for any material increase in the cost of procuring them. I have not yet alluded to the formation of lime composts, which I consider a most valuable but at the same time a totally different application of lime to that before described; it is in point of fact the manufacture of a specific manure by a judicious admixture of soda, road scrapings, and refuse vegetation. Even couch grass, and that still more objectionable weed the knot or bulbous-rooted whicken grass, are rendered useful by this process. The whole is carefully mixed with a proper proportion of quick lime, and the lime assimilates the mass, and rots the vegetable matter, rendering it highly fertile; and when it has been properly mixed, and been turned over two or three times, the lime has done its duty, and may then be applied, not for the purpose of acting mechanically on the soil of the field, but with its accompanying vegetable matter, which it has rendered soluble, as a specific manure available for the immediate use of any crop to which it may be

applied. I believe that a properly-prepared compost of this description may be applied in the rows for a turnip crop with the greatest possible advantage. I consider that the application of lime is beneficial on all soils; but the quantity required for clays and strong soils is more than for the lighter lands, as it acts mechanically in lightening the land and rendering it more friable, and easily worked. I have, however, had so little personal experience on the lighter lands that I can only say what I have read of and been told. I have four acres of very strong land let out in allotment-gardens to labourers, in lots of one-quarter and one-eighth of an acre, not exceeding the former. Many of these men have great practical experience in the management of land, and I find they mostly prefer a good dressing of lime every fourth or fifth year, which is applied at this time of year, very dry, and dug in when the potatoes are planted. Of course each year they apply a considerable quantity of manure, which renders the land capable of carrying this larger dose of lime: they say the lime makes the potatoes healthier, more abundant, and of better quality. Lime may be applied with great advantage to a class of land which, without the absolute test of experience, one would have thought it could scarcely have been required, and that is on very dry light land situated on the limestone rock itself; but I am told it is applied beneficially to both tillage and grass land so situated. It renders the land less subject to drought, and increases the produce. The quality is generally naturally very good. I think I have now trespassed sufficiently on your time, gentlemen, and am much obliged by your attention to these crude remarks. I have given you the opinions I have formed from what I have read and seen, may possibly be erroneous, and it will give me very great pleasure to hear your remarks and the results of your experience.

Mr. WILSON said he was a great user of mountain lime: he thought it better doing so than buying artificial manures; and it did more good. He would take water out of the grass land, and lime it; if tough, he would apply it hot. Sometimes he let it lie in heaps all winter, and then laid it on. He did not think there was much difference in the qualities of limestone. He would recommend using lime as much as possible.

Mr. F. HODGSON said he used the magnesian lime, and he got great benefit from it. He thought it did better for oats than wheat, particularly on the freestones. Mountain lime was good for grass: he used 3 tons of magnesian lime, and from 5 to 6 tons of the mountain lime.

Mr. BELL said he thought they had listened to a very instructive paper: he would not throw magnesian lime overboard: he thought it good on rough grass: it was an alternative more than a manure. He intended trying lime on rough grass this year, part of mountain lime, and part of magnesian lime: it should be properly spread in powder, at the rate of not more than 3 tons per acre of magnesian lime. He thought there were more fillings of the magnesian lime than the mountain lime when slaked. Magnesian was a good decomposer on newly-ploughed-out land. In the north, it used to be the practice to lay on a large quantity of lime at the beginning of a lease to last through it; but now the custom was to put in less doses but oftener, say once in eight years. He would keep manure and lime as far apart as possible in the application. He received the most benefit from lime where there was plenty of humus.

Mr. GRAHAM said he thought the too frequent application of lime on old going land made it poorer; but lime should not be made a substitute for other manures. And he thought 7 or 8 tons too large a quantity at once: it was better laid on twice: it made the price per acre too high when it was so far to lead. He thought lime was beneficial for wheat, but better for oats; and when applied after the clover fog, it was ploughed in light, and the next ploughing being deeper left it on the top. He did not believe ploughing in fog for wheat: it might answer for oats. Magnesian was the best for newly-ploughed-out grass: had used 4 tons per acre on such occasions. He thought lime stiffened light light land, and ameliorated clays. He knew potatoes to be good in destroying the wireworm.

Mr. HEADLAM, in replying, said having heard from remarks in the room that lime was useful on clover leys he would try it, and use both magnesian and mountain lime side by side.

MIDDLE-CLASS EDUCATION.

AN ESSAY ON ESSAYS.

Aristotle has defined an essay to consist in three parts—a beginning, a middle, and an end: the first portion to describe the article or object of discussion, the second to state the modes of preparation for a special purpose, and the third to exhibit the results of the application that has been made. The modern acceptance of the word understands the meaning in a composition intended to prove or illustrate a particular subject, usually shorter and less methodical and finished than a system. From a loose, free, and easy collection of sudden reflections, without any order or method, or being worked up and finished like a formal system, as was the case in the first ages of modern literature, an essay is made to contain a short history of the subject that is both regular, artful, and scientific, evincing a thorough knowledge of the matter at issue, stating proofs, deducing inferences, and leading to results. The ancient view of the subject is the stricter sense.

Some three years ago, the Royal Agricultural Society of England offered a prize of £50 for the best essay on Middle-class Education, which it was confidently predicted "would bring forth something" on that most important subject. The term should have been Agricultural Education, as the matter is purely on rural subjects. The prize has been awarded to a practical farmer, and two essays are printed along with the best essay, having been thought the next in merit, and worthy of selected eminence. The authors are reverend brothers of the cloth. The prize essay occupies eighteen pages of the Journal, and begins with a notice of the want sought to be supplied—an education for the farmer suitable to the position in society, and for the future profession, at a cost of time and means as can be afforded. The author enumerates several instances of schools more or less connected with agriculture, none of which have happened to obtain a success of encouragement. The suggestions made are very plausible, but wanting the ground-work for any better result. The primary or elemental schools are the great stumbling-block. Cirencester College is mentioned as a partial, if not a total failure; it is hermetically sealed by the expense of attendance, and its labours under the insurmountable barrier of the youth not being qualified to meet the lectures of a professor, from want of the necessary training at a subordinate institution or primary school. This want must be supplied before colleges can bestow any benefit. These elemental schools must rest on a more stable foundation than the author's views of companies and societies singly or joined, whose sole purpose is mainly that of interest and gain.

The branches of study recommended for the farmer begin with chemistry, to discover the qualities and value of soils and manures, and prevents going to the doctor to learn what medicine the land may want. The author does not state if he has learned by practice from chemistry the value of soils, and the manures to be applied, or to what doctor the resort is made. Chemistry is unable to test the value of any article, animate or inanimate—not the presence or quantity of materials, but the condition of the articles, and the ratio they bear to each other, with the mode or manner they are mixed, and the powers of exertion of the bodies in contact. And then the despotic governor of climate under which the performances are made! For these reasons, an experimental farm of any kind or extent never can be of general utility, being only a successful exhibition under the particular circumstances. Land-surveying is recommended, of which the lesser measurement may be done by the step of the leg to answer the fields in cultivation. Probably a lateral stepping may act as a cross-staff in placing at right angles one line to another line, if the steps be not shorter than the former, probably as three to two, and the length of legs being uncertain. All kinds of measuring are recommended, with drawing and sketching. The branches of natural philosophy, as dynamics, hydraulics, and hydrostatics, are necessary, with the principles of geology, but not largely. It may be added that the geology of the farmer extends into the ground to the depth of about twelve inches; if that stratum of soil be

wet, drain it; if it be poor, manure it; if it be foul with weeds clean it, and then the whole tale is told. Botany is little valued by the author, yet it is a most pleasing study, and very useful in a knowledge of weeds and grasses.

Mathematics and classical learning are almost wholly ignored as branches of education, or passed over as an inferior consideration. Yet these studies constitute a very large portion of a general and comprehensive education; the reasoning powers make men rational creatures, and classic learning forms the base of all polite education in language and ideas. The physical sciences are almost inaccessible without the ancient languages: their very names are derived from that source, with all the explanatory nomenclature. An account of the expenses and receipts is shown of a school of two hundred scholars, estimating the single maintenance at £20 yearly.

A notice is made of education in Scotland, which is based on a school in every parish, that affords a sufficient preparation for the higher seminaries in academies and colleges. The author alludes more than is necessary to the agricultural societies of England and Scotland, and inclines very justly to the opinion that the latter has been most useful. The training from childhood of the moral agent has a very slight notice, though it be the most important part of the subject, and should have begun the essay in a proper method of discussion, which is wholly wanting in this performance. The notices made of failure in schools, or the moderate success, will go far to counterbalance any benefit from the essay.

Next comes a supplementary essay of ten or eleven pages, written by a clergyman. The author argues, that the materials for a middle-class education are in existence in our endowed grammar-schools, which require only some little modification to suit the purpose. The religious difficulty that occurs in the organizing of schools is mentioned, but not removed. The author quotes his own experience in a school turned into the purpose of an advanced education, and is so far good, but seems too limited in the branches of education. The very general and most just observation, or rather a complaint, occurs, of the want of primary instruction to meet the advanced stages of instruction. No arrangements are suggested to effectually supply the deficiency, without which no upward progress is satisfactory. The essay is short and sensible, but deficient in grasp and the necessary expansion.

The third essay lies in twelve pages, with an addition of reports of inspectors on the branches of learning, and written by an Oxon M.A. The author details at much length the various acquirements of a middle-class education, probably too many for practical approval, as music, singing, and dancing are ornamental rather than useful, but may not be wholly excluded. The shortness of the life of man, and the busy world, prevent the use of too many studies, to be master of none, and direct attention to the indispensable occupations and the most useful attachments. Both the reverend authors have thrown out several very good suggestions on the subject of education, which can be introduced into any institutions.

These essays must be considered as much too limited in conception, narrow in the view of the subject, very niggardly in the details, and wholly wanting in the results. Measured by the rule of the ancient authority, the deficiency is most palpable. The matter is very confusedly placed, without any attempt of arrangement, or any semblance of order in a first position forming a second, and a series of truths from cardinal principles. There is no warmth of feeling, nor an earnestness of purpose; no glow of enthusiasm, nor any outburst of philosophy; which are most highly useful, to corroborate and brighten such a subject as the culture of the human mind for any special object. The essays might have been well composed to serve two purposes—the gentleman-farmer who cultivates his own property, or the possessor of a large capital for embarking in agriculture, and from which the lower grades could collect the materials for their own purpose, by gleanings

the whole composition. The introduction, or beginning, of the essays might have been expected to define the word "education," with a notice of the human mind, on which its action is exerted, and by no means in any philosophical disquisition or metaphysical arguments, but in the plain way of common-sense, and a most intelligible statement, short and comprehensive. Then the training of the youthful mind from childhood to the meeting of the lectures of professors at primary schools, the great want of the present time, and which must be immediately supplied, before any general benefit is obtained. Scientific seminaries will be without much delay erected in the provincial divisions of three or four counties, and then an endowed school in each parish, with two teachers, according to its extent, to teach the alphabet, reading, writing, and arithmetic in the fullest extent, with classics and mathematics, pushed forward into a leaving for the provincial college at about fourteen years of age. In order to remove as much as possible the religious scruples of mixed sects, the Bible may be read and used as a text-book, without any doctrinal interpretations, which are wholly left to each individual opinion. No use must be made of these schools as missionary stations, for the purpose of converting the heathen and infidel dissenters, nor any attempts made to sway the minds of adult juvenility on these controverted points. The want of these schools will remain as the great barrier to the intellectual progress, in the way that is attempted. The education in Scotland rises superior on that single point of the parish-schools making a sufficient preparation for the colleges, classical and scientific. It is the most important period of education.

It is evident that the winner of the prize has not been educated to know the value and feel the power of a varied and comprehensive education, both in forming the moral agents and in brightening the paths of art and science. In delineating these points of value, three periods occur for notice—at the primary schools, at the provincial seminaries or colleges, and at the business of life. The first prepares, the second cultivates, and the third applies; and each division, being properly treated, would form an essay or a small history of the culture and care of the mind, the noblest aim of all human purposes. The dry and dull monotony of the essays, the absence of order and arrangement, the want of an enlarged conception of the subject, with directions and applications for general benefit, very clearly show that the "something" that was so confidently predicted to be brought forth, has yet to be written.

Education may be defined to be the drawing-out, training and exercising, "feeding and cherishing" by artificial means of the passions, dispositions, habits and manners, various faculties, and affections of the mind, which have been implanted by Nature. Man is endowed by Nature with a faculty of reasoning, commonly called "mind," which is very susceptible of impressions from external agencies on the body, or the corporeal habitation. The regulation of these impressions, and the proper use of the faculty of receiving the sensations, raise the necessity of education, of which the value depends on the application. The beginning of education is seen in the first smile that gleams on the infant's cheek; after that time, every hour is lost. It begins with the mother's look before the alphabet is taught, and with the father's nod of approbation from the time that the child can lip a word, observe an action, or receive an impression. The early sequences from the first impressions form the primary habits, which become the fundamental character of the man. The most important point of education is to form these habits by an early attention from the period of sensation itself.

The parental fireside is a seminary of infinite importance, from being universal, and bestowing an education which, being interwoven with the woof of childhood, gives form and colour to the whole texture of life. There are few who can receive the honours of a college, but all are graduates of the hearth. The learning of the university may fade from recollection, its classic lore may moulder in the halls of memory; but the simple lessons of home, enamelled upon the hearts of children, defy the rust of time, and outlive the more mature but less vivid pictures of later years. So deep, so lasting indeed, are the impressions of early life, that old age is seen holding fresh the events of childhood, while all the wide space to manhood is a forgotten waste. The portrait of early days may get dim and discoloured, and seem to decay, or covered with after-designs; still the original will shine through the outward picture, giving it tone while fresh, and surviving in decay. Such is the fire-

side—the great institution furnished by Providence for the education of men.

The boy at the age of eight or nine years travels a convenient distance to the parish school, in which the common schooling in English, reading, writing, and arithmetic, are pushed to the very fullest extent in a time of about six years. The classical and commercial education is at the same time carried forward to at least one-half the necessary perfection, so that the youth is fully capable of meeting the professors in a higher seminary. This part of education is by far the most important in the life of man, and must be afforded cheaply and conveniently at the parish schools, in the national endowments, and under a Government inspection, as being instituted for the general benefit under qualified teachers.

The youth being now half-way advanced in education, is removed to the provincial seminary of science and classical learning, where to prosecute the general branches of study, and with a view to a special purpose. In the case of agriculture the science of chemistry enjoys a foremost place, even among practical arts, as it determines the constituents of natural bodies, and the laws which regulate the combinations of the elementary particles of matter. This definition of the science and art of chemistry at once shows the vast importance of it as a branch of education, as it unravels and lays bare the mysteries of nature, and shows to our wondering eyes the composition of different bodies, the action which they exert on each other, and the ultimate results of the union of the elements that have been subjected to the influence of the reciprocal action. The study of these actions is most useful to the common purposes of life. Botany is a very amusing, most rational, and entertaining study, natural and scientific, of the vegetable world, with the use of the multitude of the different plants that grow on the face of the earth. A knowledge of the habits and properties of vegetables, and chiefly of weeds and grasses, is very much recommended to the agriculturist. Mineralogy and geology may be classed together, affording a knowledge and the position of the indurated masses or rocks and stones, with earthy layers, that appear on the face of the earth, and the different theories of the formation and structure of the globe. The ideas and the language entertained and used on these subjects are highly useful, even in the absence of any permanent improvement or substantial information. The recommendation of these very ennobling studies does not tend to understand any pre-eminence in the single branches, but merely to give the student a comprehensive notion of the objects which it embraces, and which can be pushed to the end of advancing the mind, and enlarging the extent of general knowledge. Between distinction and ignorance there is a wide and useful field of information, in which there may be acquired an extent of erudition on any subject that will very beneficially apply to the object that may be in view, and will most amply repay the labour that may be bestowed in the acquisition.

The acquisition of classical literature is a very important part of a liberal education, and the scholar should be early engaged in the study of the Latin, and in due time of the Greek language. Those persons who deny or lessen the value of these sources of learning, show a very neglected education, as not reaching to form an estimate from their own experience of the value of the acquisition. These languages give great facility to the acquiring of others, especially the English, which is largely derived from them, and of which the grammar is wholly learned. The sciences that have been noticed for study are wholly founded on these languages in the names and explanations, requiring a double labour from persons who do not know them. He who has in early age been taught to study and revere the characters of the sages, heroes, statesmen, philosophers, and poets, who adorn the annals of Greece and Rome, will necessarily imbibe the most liberal notions—he will catch a portion of that generous enthusiasm which has warmed the hearts and directed the conduct of the benefactors and ornaments of the human race. In the histories of Greece and Rome, those great theatres of human glory, the pupil will find the highest examples of conduct that can be practised by man; and that person may very justly suspect both his genius and his taste, if he receives no pleasure or benefit from the perusal of writings which so many ages have con-sorted in holding up as objects of admiration. From the sublime spirit of the ancients there ever arise some fine effluvia like vapours from a sacred fountain, which work themselves

insensibly into the breast of another who may not be blessed with such a towering genius, and seldom fail to fire the imagination and to illuminate the whole mental frame; and if he be not wholly dead to every power of feeling, the luxurious repast will not fail to transport him beyond himself, and kindle his mind into a blaze. The reader is carried into the feelings of the writer, and the benefit is transferred. The ancients thought, the moderns only dilute their ideas, who have the advantage of looking from the height which the ancients had reached, as a dwarf placed on the shoulders of a giant will see more and further than the giant that supports him.

Among the very foremost branches of a general education must be placed the study of mathematics in the branches of geometry, which includes all kinds of plain measurement, trigonometry, and algebra, extending to natural philosophy in the useful parts of statics, dynamics, hydraulics, and hydrostatics, and similar portions. Mathematics improve and enlarge the reasoning computation begun by the simple rules of arithmetic; the branches of mathematical learning constitute the best introduction and foundation of the art of reasoning justly and correctly in life and in learning. As matters of taste they form most delightful subjects for intellectual truth as the most beautiful objects that the mind can contemplate. No system of education is half complete without a large portion of mathematics, the doctrine of ratio being most highly useful in making proportional arrangements of all matters and business in exact bearings, or in a metrical rhythm which Longinus supposes came from the Deity, as seen in the works of the Creation, which could not have existed so long without a metrical order and arrangement. The general use of mathematics confirms the belief of the great value of that species of learning.

This notice can include only the chief parts of education, of which the minor portions, as history and biography, are let slip, with all the ornamental appendages. A full discussion would require a volume of bulk. In the choice of authors and books for reading, the best only must be chosen during the course of education—in the advanced literary part, "*Omnes degustandi*" (Quintilian)—but the judgment must be formed by choice selections.

The notice of the most essential branches of a liberal education must not omit the imperative necessity that everywhere exists for an accompanying religious instruction. On this dangerous field we shall enter cautiously, and proceed with a trembling step. But that degree of common charity which is now allowed in all such cases, and which says to every one, "*Et sentire quæ velit, et quæ velit dicere,*" will readily allow us to observe, that all true theology should be bland in its nature, mild in its precepts, easy in its observance, cheering in its prospects, and alluring in its rewards. Religion must never assume the frown of austerity, nor be armed with terrors of vengeance; it must always be associated with what is pleasing and captivating, lovely, cheerful, and inviting, and never appal the young and susceptible mind with the dread of unrelenting severity. Religion must give a zest to every enjoyment, and heighten and refine the native gaiety of the heart: above all things, let it burst and break down the despicable barriers which prejudice and bigotry have erected around ect and self, and within which creeds and dogmas have entrenched themselves behind buttresses of the most spiteful intolerance, and have guarded every avenue approachable by reason and benevolence, with engines of vengeance to beset and scar with mental vitriol every dissent of opinion in faith and practice. Benevolence in order to be useful must be universal; it must wander unfettered over the globe, and in comprehension it must bestride the world: when liberally interpreted and mercifully practised, no branch of instruction in refining the sentiments and in exalting the mind of man, and experience shows the ill success of instructions that want the religious adjunct.

It has been objected to the study of the sciences in general that they are inimical to religion; but it is certainly impossible to see how the expansion of mind and the exaltation of ideas that are produced by natural study can be hurtful to true religion. On the other hand, the direct and invariable tendency of general learning is to reduce the ignorant fumes of enthusiastic reverie to a system of rational belief.

Boys must be early placed on the avail of learning—"Junes incende stadiorum positi" Tacitus—where the dustle

mind will be forged and fashioned by the constant operation of the teacher's care, unceasingly applied and skillfully directed. Mankind are composed of hammers and anvils, of which the relative number shows the advanced state of human progress. If Nature has conferred two mental qualities, the third generally proceeds from the two working in unison. Knowledge must be poured very gently into the youthful mind, being like to bottles with narrow mouths, which being filled too rapidly, much will be wasted and little received, whereas by a gentle stream they will be easily filled. Education must be pushed through every avenue that can be found for it. Knowledge pushed aside into the mind will soon find room to turn. The mind must be a bee-hive: the insect sucks many flowers in search of honey; so the sources of learning must be many and varied, in order to afford a fusion of materials to form an original production. The mind becomes a gallipot, in which the variety of knowledge is compounded into a most valuable production: it will be a banker, rich in an assemblage of other men's goods for its own use.

During the whole course of education care must be used not to cast the mind into a mould of dogmas, benumb and cramp the intellectual energies, and wholly destroy originality. The thoughts and opinions must be developed from within, and not impressed from without, thus relieving the faculties from all necessity of exertion, and making the mind a wholly passive recipient instead of an active exponent. The mind becomes a damp percussion-cap, slow of ignition, or never goes off at all. Philosophers in the slip of science sometimes forget that the disciple cannot embark without a boat.

After a period of at least twelve years of varied and comprehensive education at the parish school and at the scientific seminary, the age of twenty years will be turned, when the student issues forth into the forum of life, armed for battle at all points, with sword and shield for protection and defence. He proceeds to the study of the professional art, not till now beheld, when the mind is free and unfettered, and stored with learning to bear upon the subject. "*Denique ipsa multarum artium etiam non aliud agentes ornat, atque ubi minime credus eminet et excellit*" (Tacitus). The acquisition of general knowledge will quickly appear in exalting and refining the ideas, ennobling the mind, and enlarging the understanding, and in enabling the possessor of it to entertain and perfect ideas in his profession which a more narrow-minded information would scout and condemn. A cultivated mind will ever desire to associate with cultivated objects, for the alliance is near and fixed. The expansion of mind that flows from general education enables to comprehend and perfect the "ideal" or the mental conception of things, which is no chimera, but the offspring of reason and the understanding. It is the lofty aim of distinction and eminence, and also the mode and order of proceeding in the most complete manner, and in all the varied relations. Education will teach men to see everything, and consequently to abridge everything.

The existence of one or a few more substances would not produce the fiery volcano; a number of heterogeneous substances are required to produce the over-boiling "lava," which is found to be very fertile. In like manner, a number of branches of education are poured into the intellectual furnace, where, by the action of attrition, fusion, and amalgamation, a new substance is produced, which overflows and gilds with a fresh lustre every object and material, and smothers all obsolete prejudices under its weight, as whole cities have been submerged by the overflowings of burning mountains. New theories will be formed and positions taken without a precedent—a lofty height to which some few daring spirits ever venture to ascend, and reached only by the intellectual vigour given to genius by a general education. It is the highest aim of all pursuits, reached by a leap or gradual ascent.

From the riches of general learning, the mind, as Tacitus expresses it, "*exundat et exuberat omnia rerum; scientia et expluribus artibus et vis ingenui crescit amplitudine rerum.*" And a varied learning, "*altius sicut flamma materia et motibus excitatur et urendo clarescit.*" The eminent writers of antiquity bear ample testimony to the inestimable value of a general learning: "*Ne vis et facultus angustis et brevibus terminis claudatur*" (Tacitus). Cicero calls a limited education, "*Inopia et desidia.*" The tendency of varied learning proceeds to remove the latest barbarism of the mind in old customs and prejudices, which chance and accident have placed

in use. Agriculture is the science of circumstances and modifications, and requires the whole circle of the sciences for its illustration, and a large, varied knowledge for its adaptation, and to throw up the mud of its condition into the heaven of its refinement, where it will act as a sail to the vessel of life when set aloft with a heavy ballast of integrity.

A general education diffused over the mass of a people, by being placed on tangible grounds, and within their reach, is the only method of imparting knowledge that can be attended with comprehensive benefits. Colleges and expensive seminaries educate only the few who enjoy the necessary means, and generally become sinecures and nurseries of indolence, and engines for propagating and upholding peculiar doctrines of monopoly and servility. And all proposed systems of education are framed to inculcate the dogmas of sect, and to perpetuate obedience to the opinions of one powerful party. The general diffusion will give an opportunity to bolder aspirants to emerge from the mass, and who but for the education being afforded might have remained for ever unknown; and the education must be placed within the reach of the people, or the people must be raised to reach the position of education. If it be absurd to expect perfection in any human affair, there certainly can be neither absurdity nor foolishness in making the nearest possible approach to it. Every people may be educated and raised from poverty and ignorance, and can very easily provide for all their wants; and what has been

made of one class of persons may be made of another, if the same means be allowed and used. What a field for enterprise when a prospect so brilliant is open to the view! What an incitement to action, when a prize so great is to be won!

It may be objected that in the notices now made, the subject has adopted too high a standard and has assumed a tone much too lofty. But the object should be to place agriculture and the higher arts on the same level with law, medicine, and theology, as requiring an equal attention and the same means of development. It is of vast importance to fix at an early period of life an elevated idea of the profession in the mind of youth, while it glows with ardent feelings and a generous enthusiasm, and be made to regard it as demanding the exercise of the widest range of intellect. There must be inculcated the highest elevation of taste and sentiments, the noblest standard of professional morals, and the most dignified refinement of habits and manners. A most important and very powerful operative principle may be supplied by forming such an estimate at the most susceptible period of life. A stimulus will be afforded by implanting the love of the profession as a predominant motive, which must prove equally active and powerful—it will banish all inferior considerations, make a charm of every pursuit, impart a dignity to every sentiment, and give a grace to every action. Agriculture can want no commendation where there are educated men and enlightened understandings. J. D.

THE PRODUCTION OF PASTURE.

At a meeting of the Ayrshire Farmers' Club, Mr. R. Whyte, East Baws, read a paper on "The Production of Pasture in Dairy Farming." He said: A certain amount of dairy stock is kept on the pasture for the production of milk, and a portion comes under cultivation to produce winter food for them. The arable portion is varied according to the quality of the soil and the climate of the locality; but in the medium soils of Ayrshire fully more than a Scotch acre is required for fodder for each cow. The pasture-fields are broken up in rotation; and after a system of cropping, which must also be varied according to circumstances, they are again sown down to pasture; and it is to this department of dairy farming that I have been requested to call your attention at this time. The production of rich pasture ought to be the first aim of every dairy farmer, as on the quality of the pasture greatly depends the amount of success he may attain in his calling. Cows fed on rich pasture attain a greater size than if fed on poor, and when sold, either as store stock or in the fat market, command a correspondingly higher price. The produce also partakes greatly of the character of the pasture on which cows are fed; and that best adapted for improving the carcass and laying on fat will give the richest produce, and that which yields the animal the greatest amount of food with the least trouble is that which enables it to yield the greatest quantity of milk. To have the fields well covered with luxuriant pasture not only improves the stock, increases the quantity and improves the quality of their produce, but it forms the best guarantee that we can have for an abundant crop of grain when they come under aration. Land covered with a rich and productive sward improves in condition more rapidly than that which is covered with poor and scanty vegetation. Under a rich sward there is an accumulation of vegetable matter which undergoes decomposition when it is turned over, and yields a large supply of excellent food for the cereal plants, and will produce a heavier grain and better straw than an ordinary coating of farmyard manure. To keep the fields well covered with a rich sward, then, is the best receipt for successful farming. Rich pasture consists in a close cover of those grasses which yield the greatest amount of nutrition to stock feeding on them; and for its production, it is necessary that the land should be thoroughly drained, if it is not naturally dry; for all the best sorts of grasses dislike a wet bottom when they are young, and will not root deep enough in it to bear the vicissitudes of the seasons, but will die out as soon as they have ripened their seeds. The land should be gathered into ridges, with the drains between, the breadth of the ridges being regulated by the wideness at which the drains are necessary. It ought also

to be deeply cultivated, so as to render it open and porous to make it penetrable to the atmosphere and the roots of the plants, and to allow the rain-water to percolate freely through it. By this means, it is less affected either by protracted wetness or by severe drought. The roots of the plants are struck deeper into the soil; and, having more scope, a greater number of feeders are sent out; and the plant, being more copiously supplied with food, is enabled to produce a greater amount of herbage. It is also necessary to maintain the land in good manurial condition. All grasses have their own individual propensities, and are indigenous to certain soils, conditions, and climates. In naturally dry and rich soils, the better class of grasses grow spontaneously, while the poorer soils are clothed with those which contain a greater proportion of woody fibres, nature providing the land only with such covering as it is able to support. The better grasses may be introduced into poor soil, and struggle for a miserable existence for a season, but unless they find a ready supply of those elements which form their structure, they must inevitably die out; while with good cultivation and a liberal manuring they may be retained, and produce a rich and nutritious sward. We must therefore endeavour to bring our land into a condition similar to that to which the better class of grasses are indigenous. The tendency of dairy-farming, as generally practised, is to impoverish the soil of phosphates by their continued drainage both from the grass and the arable lands. Of the cereals raised, the greatest portion is sold off the land, and only the straw retained to be converted into manure, and returned to the soil; and the produce of the dairy is almost entirely removed. Unless the dairy stock receive a considerable amount of nutritious food during the winter months—as they are either producing milk, two-thirds of the inorganic constituents of which consist of phosphates, or they are nourishing the embryo of a future generation of the bones of which phosphoric acid is a principal component—the manure produced is comparatively poor, and, alone, is incapable of maintaining the fertility of the soil. The quality of the manure, however, is considerably improved by the use of an extra amount of feeder. The fattening of cattle during winter produces a greatly superior manure, and fattening on the pastures has not much of an exhaustive tendency as either the rearing of stock or the keeping of dairy cows. While cattle are fattening they assimilate an excess of the fatty matters of the food, and excrete a proportion of the other alimentary substances corresponding to that excess, while milk cows assimilate the whole of the matters as well as the vegetable oils. The food which, when

used by a feeding cow, is requisite to produce 1 lb. of beef, would, if used by a dairy cow, produce in milk nutritive qualities equivalent to more than 2 lbs., and the matter excreted by the latter, being robbed of these ingredients, is correspondingly poorer. The liquid manure which contains the most of the phosphates and ammonia being generally allowed to run to waste, is another source of exhaustion to the land. The farmyard manure is most economically used to raise the cereal and green crops, and should be ploughed deep into the soil to keep it open and porous. Its decomposition assists the disintegration of the soil, tending to render it more friable, and this action of the manure is entirely lost when it is allowed to lie and decompose on the top. Artificial manures are the best adapted for surface application, as they are more readily washed into the soil, and the pasture raised thereby will be more readily eaten and better relished by the cattle. To supply the deficiency of phosphates and supplement our manure heaps, then, it will be found profitable to top-dress our young pastures copiously with bones, mixed with a little ammoniacal manure, as the poverty of the soil is the greatest enemy with which they have to contend. If we keep the soil well drained, deeply tilled, and in good manurial condition, Nature would soon bring upon it a luxuriant vegetation; but if we go hand-in-hand with Nature, and deposit the seeds of those plants we wish to cultivate, it will render us great assistance in covering the land with useful herbage. I may now make some allusion to the general systems of cropping and their influence on the production of pasture. The most common system on the higher and more inland localities is to take two crops of oats and a crop of perennial ryegrass-hay, and then allow the land to be depastured for three, four, five, or six years. This system has the recommendation of being the least expensive in management, and on heavy land when it is well manured it is the most profitable; but if the soil is allowed to remain poor it encourages weeds and the poorer grasses. When this system is followed on clay soils, not naturally calcareous, a little lime may be very profitably applied. As there is an accumulation of organic matter in the soil when lying in grass, some of the manurial elements form insoluble compounds with the organic acids, and are thus lost to the plants, the lime tends to their decomposition, and makes available all the manurial matter the soil contains. Lime ameliorates the soil, assists in its disintegration, neutralizes any acids, and decomposes any poisonous substances in it, in adaptation to the health and exigencies of the plants; it acts injuriously on most of the poorer grasses and encourages all the better sorts. In some districts lime is applied to the sward during the summer before it is ploughed, a coating of farm-yard manure put on the stubble and ploughed in for the second crop of oats, and by this means the land is sown out in good condition for pasture. Lime put in a powdery state on the ploughed land, and harrowed in along with the seed of the cereal crop, is a good preparative for the grass and clover-seeds, and for the first year secures a luxuriant growth. The custom of allowing grasses to ripen their seeds (the first year) is unfavourable to the raising of first-class pasture. This practice, which is so prevalent in this county, weakens the roots of the plants, and deprives the soil of a quantity of phosphates. As no seed can be formed without the presence of phosphoric acid, it is therefore incongruous to a dairy district. The growth of beans, either on lea or in drills, is unfavourable to the production of pasture, the decaying roots of the beans proving poisonous to the grass plants, so that the pasture does not assume the same healthy appearance after them. Barley is the best cereal crop on which to sow the grass seeds; it is not an exhaustive crop on the land, and being nearly off, the grass plants are enabled to root deeper the first year. Under the foregoing system of cropping, the land undergoes so little tillage, and is so little exposed to the atmospheric action, that the vegetable matter is not altogether destroyed, and some of the good perennial grasses still retain hold of the soil, and appear again in the pasture when sown down. By this means the land is covered with a close sward sooner than after being green-cropped; but unless the land is kept in good condition, and full crops raised, the sward is likely to be composed of a considerable number of spurious grasses and other weeds which yield comparatively little nutrition to the stock feeding on them. If the land, through poverty or otherwise, has go covered with a coarse and unprofitable sward, it ought to be subjected to a system of cropping, embracing a green crop.

In green cropping, the soil is freed from all roots of grass and other weeds; the organic matter is completely destroyed by the prolonged exposure of the soil to the influence of the sun and the atmosphere, thus rendering it comparatively poor. An opportunity, however, is afforded of deepening the soil by tillage, and improving its texture by reducing it to a fine state of comminution. Thus the green cropping of clay land, though an expensive operation, exercises a salutary influence on the soil, and by a kindred action renders the application of lime less necessary. The clay of the soil is decomposed by the atmospheric influence and the mechanical operations brought to bear on it. The alkaline earths and silicic acid in combination with it are rendered available for the plants, and give firmness and strength of straw to the following cereal crops. There is a very prevalent idea that the green cropping of heavy land is antagonistic to the raising of good pasture; but when the season is favourable, and the land properly managed, there is nothing in the system that militates against the growth of grass. A considerable amount of manure is applied for the growth of the green crop, but there is generally a ton of turnips removed from the land for every ton of manure applied. Five quarters wheat or eight of oats are next taken, and the third year a crop of hay with seed. It is not to be wondered that after so much has been taken from the land with only one manuring, the grass should refuse to grow luxuriantly. It is not so much the ordeal through which the soil has passed that hinders the growth of pasture as the absence of the food requisite for its maintenance. The land having been cleaned of all vegetating roots, we are dependent on the seeds introduced for a sward, and as it is generally ryegrass and clovers that are sown, unless the land receives a supply of manure, the ryegrass plants, having ripened their seeds, will thin out quicker than the clovers can cover their spaces, thus producing but a thin pasture. It generally comes a little earlier after the land has been green cropped; and by introducing a proper selection of grasses, and judicious topdressing, the finest pasture will be produced. However, as there has been for some time back considerable risk of injuring the land from the seasons proving unfavourable, I would only deem it expedient to green crop when the condition of the land demands it, to clear it of weeds and introduce a better class of grasses. When land has once been brought under a good sward, it may be retained without green cropping by raising good crops and sowing out with a proper selection of seeds. But as we cannot lay down one rule to suit all circumstances, my remarks are not applicable to either the light soils near the sea level, where green crops can be more profitably raised, nor to the higher and more moorland districts, where the cereals are more hazardous. For the sowing down of pasture a considerable number of grasses ought to be sown, as it is a well authenticated fact that grasses of different kinds grow much closer together than those of the same species. If one species only be sown, no matter what species, or how thickly sown, or on what character or condition of soil, only a portion of the plants will prosper, and blank spaces will occur among them, inviting their occupation by thistles or any other weeds whose seeds may be ripening in the locality. But if a proper mixture in sufficient quantity be sown, the plants will grow more rapidly, and encouraging each other will soon cover every portion of the surface, giving it the appearance and the properties of old pasture. As the grasses differ in composition, some abounding in fatty matter, some in saccharine juices, some in protein compounds, and others in extractive matter, so the food presented to the animals by a mixture of grasses is of a more varied character, is more conducive to their health, and enables them to yield a richer produce. The mixture of grasses to be sown must be selected according to the quality, the condition, and the situation of the land. I will mention a few which are easily grown and very nutritious, are adapted to a great proportion of the county, and are coming every year into more general cultivation, while ryegrass and white clover continue to form the groundwork of the sward. The first I would mention is Timothy. This grass adapts itself to all situations, but thrives best in strong damp loams. It is a quick grower, produces a great amount of herbage, is as early in spring as ryegrass, is later in ripening its seeds, and contains nearly double the amount of nutritive matter. It is greatly relished by stock, either in the dried state or in pasture. Its seeds are very small, and require not to be deeply covered when sown. Cocksfoot is also a

hardy grass, and may be profitably introduced into pasture. It grows readily on all clay lands, and when well cultivated produces a great amount of herbage. It grows very rapidly after being cut, and when kept constantly low by grazing it is more profitable than ryegrass. Its habit of growth is tufty, and will thin out after four or five years. Its seeds require a deeper cover than Timothy, growing best with about $1\frac{1}{2}$ inches of sower, but may be mixed and sown with perennial ryegrass. I would also recommend crested dogtail as a grass worthy of our attention. Although it is not such a strong grower as those already mentioned, yet it is nutritious, is readily eaten by cattle, and is an ingredient of all old pastures. It grows freely when sown, although its earliest stems shoot readily up to seed, and are then refused by cattle. Yet a great number of small fresh leaves grow out from its root, and give a healthy colour to the fields. For sheep particularly this is a valuable grass; but though some agricultural writers assign it but a minor place in cattle pasture, yet in my own experience I have found it conducive to the richness of the sward. Meadow fxtail may also be sown. It is a strong growing grass, comes early in spring, is succulent, and relished by the cattle, although not quite so nutritious as those already mentioned. Rough stalked meadow-grass is also valuable in mixture with those already named. It sends out trailing shoots along the ground, from the joints of which roots are sent into the soil, and thus occupies all the empty space. It is eaten closely by the cattle and helps up the verdant freshness of the pasture at the end of the season. It is incapable of providing good pasture alone, but under shelter of those stronger growing grasses, it will flourish and thicken up the sward with nutritious food. I might also mention several other of the poas and some of the fescue grasses as useful in pasture, but, being creeping rooted, they are better adapted for permanent pasture than for alternate husbandry. Those that I have mentioned are well worthy of our attention, and being carefully sown along with perennial ryegrass and some clovers, will make a valuable contribution to our pastures. In order that the seeds may be got properly covered, the land should be well pulverised and made comparatively smooth on the surface previous to seeding, and 2 bushels perennial ryegrass, 4lbs. cocksfoot, 2lbs. meadow fxtail, and 2lbs. red clover should be mixed and evenly strewn on a Scotch acre, and covered with a turn of chain or light harrows. The other seeds—8lbs. Timothy, 1lb. crested dogtail, 2lbs. rough-stalked meadow grass, 3lbs. white clover, and 1lb. alsike—may be mixed and sown either before the land is rolled or after the cereal crop covers the clod, when it will shelter the young plants from the drought and the scorching summer sun. These seeds being very small require very little cover; more of the seeds will grow without a cover than with half-an-inch of cover. When sown they readily fall into small crevices in the surface, and by the influence of rain and storm get sufficient covering and moisture to enable them to send their roots into the soil and grow. Should the grass seem thin on the removal of the cereal crop, more seed ought then to be applied; and should the clovers fail to grow, as is frequently the case after two crops of oats, unless lime has been recently applied to the soil, they should again be sown as soon as the winter's frost is over, and before the land gets consolidated by the drying winds of spring. The young grass may be depastured in winter with sheep or young cattle, but ought not to be eaten very close. In spring the land should be frequently rolled, as the grasses thrive best on a firm condition of the soil, and the young plants are apt to be thrown out by the frosts and thaws. The grass is more encouraged by being depastured the second year and retaining the droppings of the cattle feeding on it, than by being cut when the whole produce is removed from the land. When the latter method is followed it should be topdressed in the following spring with bones and sulphate of ammonia mixed in the proportion of two of dissolved bones to one of sulphate. In the more arenaceous soils the bones may be applied either as half-inch bones or bonemeal, and should be sown in winter or early in spring. If farmyard manure is used, it should be made into compost during the summer by mixing with dry earth in the proportion of two of manure to one of earth, it should be turned over, well mixed, and allowed to ferment. It should be applied immediately after the removal of the hay crop, and should be broken very small by the use of a chain or bush-harrow and the roller. The stock should be put on the young grass early

in spring to prevent it running to seed and being thereby lost, the land impoverished, and the roots of the plants exhausted. All pastures should be regularly and evenly fed down, as there is waste in having them too close eaten or left so rough as to run to seed. The amount of stock should be carefully proportioned to the pasture, so as to avoid both extremes; but as overstocking is attended with the worst consequences, we ought to guard most particularly against it. But as our county annually groans under an overstock of cattle at this season, instead of reducing our number to suit our pasture, let us rather, by a better acquaintance with the nature, the habits, and the wants of the various plants which compose them, endeavour so to increase their produce as to supply the requirements of our stock.

The CHAIRMAN then called upon the gentlemen present to express their views upon the paper which had been read. Mr. CUNNINGHAM, Shields, said the subject they had met to discuss to-night was probably one of the most important that could be considered by agriculturists, more especially those on this western side of the island, where the climate was much better adapted for the production of grass than of grain. The Ayrshire Agricultural Association had done much towards improving the quality of their dairy produce; and the step that ought to be taken next was to endeavour to increase the quantity of that produce, by improving the quality of their pastures. He had no doubt that, if they gave the same attention to the management of their grass-land that they gave to their white and green crops, the result would not only be pleasant and profitable to themselves, but likewise to the whole community. This led him to observe, in passing, that to enable them to carry out this thoroughly and satisfactorily much more capital was required in farming than had been hitherto the custom. He was of opinion that, instead of £10 per acre being sufficient capital, £15 or even £20 should be employed so as to yield the best possible result. Before, however, such an amount of capital could be obtained for this purpose, and before full and free scope could be had for its judicious application, very considerable changes would have to be effected in the present mode of letting land. He wished some member would favour them with a paper on this subject soon. Much more liberal covenants must be framed; in farm leases, all unnecessary restrictions and trammels must be expunged; and there must be a total repeal of those iniquitous laws, which, however they might be tolerated during the reign of Charles II., were now not only suicidal to individual parties, but also inimical in the highest degree to the interests of landlords, tenants, and the general public. He was much mistaken if the people of this country, who were daily becoming more enlightened on these and kindred subjects, would stand much longer tamely by, and see such an amount of money sent to foreign lands to purchase the necessaries of life, when at home they had thousands of acres of land which might be made to yield, some thirty, some sixty, and some an hundred-fold more than they were now doing. He had been asked the other day by a gentleman who had been appointed agent of an estate in this county to go over the estate with him; and he must say, if any one had told him of its condition, he could not have credited it. He never saw arable land in such a state. Part of it was drowned with water; and it was altogether in a deplorable state of foulness and poverty. There was not even grass upon it; while some of the tenants' cattle appeared to him to be in a state of semi-starvation. Such mismanagement was, to say the least of it, very reprehensible. He quite agreed with Mr. Whyte that they should use a greater variety of grass-seeds than they had been doing; but he thought he prescribed too great a quantity of perennial ryegrass. He would like to see some seeds introduced that would supersede that trashy perennial ryegrass, and give a better herbage; for it had nothing, in his mind, to recommend it but its cheapness. Mr. Whyte took no notice of Italian ryegrass, which he considered much better. It came sooner forward in the beginning of the year, and this was a matter of considerable importance. Another thing they might take notice of. Their attention had lately been called by Mr. Hope, of Fentonbarns, to the adulteration, or "doctoring," of grass-seeds. It had been well said that he who made two blades of grass grow where one grew before was a public benefactor; but what should they say of the ignoble wretch who wilfully took the means of subverting the efforts of those who were laboriously striving not only to do themselves good,

but to contribute to the common good? He thought the perpetrator of such a deed ought to be summarily dealt with. Mr. Cunningham concluded by expressing his high sense of the value of Mr. Whyte's paper.

Mr. DALGLISH said he had been very much gratified, interested, and instructed with Mr. Whyte's very valuable paper. With regard to pastures, he was here to say, although he was a seed merchant, that there was no better way of producing permanent pastures—he did not say pasture in the rotation of cropping, but just for land in a proper manurial condition—than to lay it down and give it no seed at all. Nature would clothe it better than they were able to do. From the method adopted in Ayrshire, however, of having grain and grass alternately, it was necessary, for a few years, that grass-seed should be applied before they could have profitable pasture. He perfectly agreed with Mr. Whyte in recommending natural grasses. As to perennial ryegrass, he did not consider it a pasture plant at all; and he never sowed an ounce of it, although he sold fifty quarters of it for one of common ryegrass. He sowed annual ryegrass, so that it might be removed from the soil, and allow other plants to take its place. He agreed with Mr. Whyte that Timothy was one of the best grasses they had. It was equally as early as perennial ryegrass; and that was the only recommendation perennial ryegrass had. But if Timothy was used in its stead, cattle would get out as soon; and it remained in a palatable and eatable state during the season, while perennial got hard and stunted, and prevented other grasses from growing; and it was abhorred by cattle, which would not eat it unless compelled to do so by starvation. In regard to what Mr. Whyte had said about the ploughing-in of dung, it might do for the land in his part of the county; but, so far as his experience went of the soil and the climate of his district, he found that, to plough farmyard manure into clay soil, it would lie sealed up for a series of years till again ploughed up; and it did no good whatever to the pasture, whose roots never reached it. All grasses, except perhaps Timothy and clover, were very shallow-rooted; and they did not get the benefit of farmyard manure four or six inches deep. It was the practice in his district just to harrow in light manures with the crops, and afterwards to top-dress with dung. These fine-rooted grasses got the benefit of it when applied on the top, whereas they did not find it when applied under. Passing to another point, he thought that instead of the width of the ridges being regulated by the width of the drains, they should be regulated by the depth of the surface-soil. It was a most egregious error, when the land was a thin clay, to have the ridges very broad. They had to be raised in the middle to shed off the water; and if the soil was thin clay, it became necessary to bury one-half of the good soil in the centre, and on the other side to penetrate into the clay. It had been his practice never to make the ridges more than twelve feet wide; and then the ridges were not very high in the middle, and not very deep in the furrows. Mr. Whyte had said the soil should be deepened as much as possible; but he thought it was often a great error in people trying to deepen the soil where it was impossible. In cold clay there was only a certain depth to which the sun could penetrate; and to attempt to deepen the soil on such land was labour in vain. Mr. Dalglish then, referring to Mr. Cunningham's statement that more capital was needed for the proper cultivation of the land, said, while that might be true of some parts of the county, he would like to know what up in the cold clay soil of Auchinleck they were to do with £15 or even £10 an acre of capital. They could not profitably raise green crop; they could not profitably feed cattle; and he believed if he had £5 per acre to cultivate his farm, he would bring as much out of it as if he had £20 per acre. With regard to the "doctoring" of seed, he thought the farmers ought not to throw all the blame on the seed-merchants. The fact was that the merchants must just get what would sell. When parties came to be seed-merchants and beat them down in price, what could they do but try to meet them at their price? It was a temptation farmers put in their way, and it was quite possible they might err as well as other people under temptation. But if that temptation were removed—if farmers came asking the seed at a reasonable price, there was no seed-merchant in Ayrshire who would give them adulterated seed.

Mr. BRUCE, jun. (Shaw) said: While agreeing pretty much with Mr. Whyte about the value of natural grasses, he thought

his remarks applied more to the inland districts where the grass was laid down for a number of years. Nearer the coast they required something that would do for a year or two. Although he thought very little of perennial ryegrass, yet he did not know if there was anything else they could use more profitably in the meantime, except perhaps Italian. With regard to what Mr. Dalglish had said about land growing grass itself, he thought in his quarter it would soon get a covering he would not think much of. By high manuring, sowing down in good condition, and top-dressing, ryegrass ought to do very well on early soils for a year or two.

Mr. SMITH (Mosablown) thought it of great importance that every farmer should look to the kind of seed he bought. Was it not the case that seedmen sometimes showed them seed at 1s., and other seed at 10d., and told them that the one was as good as the other? whereas he knew that the shilling seed would grow, say 60 per cent., while the penny seed would not grow 20 per cent.? He believed that kiln-drying killed the seed, and that merchants who gave out that kind knew beforehand that it would not grow.

Mr. FLEMING (Rushaw) said that in the northern district of the county from which he came, where the land was well adapted for dairy purposes, there was, as here, great diversity of opinion as to the best grasses and the best mode of cultivating the ground for dairy purposes. It was natural to expect difference of opinion among gentlemen from different parts of the country; but when they found difference of opinion among contiguous farmers it was not so easily explained, unless they held it to be due to taste or perhaps to prejudice. He agreed with much that had already been said, but there were three things he considered as hostile to a dairy farm, viz., the plough, wheat, and artificial manures. He had been led to regard them all very much as blood-suckers. The plough should be used no more on a dairy farm than was necessary to provide material for the consumption of the cattle in winter. Wheat should never come in contact with the dairy, and artificial manures, if used on a dairy farm, would prove quite exhaustive. Ten or twelve years ago the idea got abroad that the leverer the land could be got the better; but a few years' experience had shown the fallacy of that idea. In upland districts he thought the higher the ridges were the better. He would not denounce perennial ryegrass as Mr. Dalglish had done. It was a fortnight or three weeks earlier than other grasses, and though it faded in June and July, there was a second growth in the autumn. Annual grass was used by their forefathers, and he was much mistaken if they would not require to fall back on that old system. There was a want with annual grasses the first two or three years, but after that the natural grasses came up. Another thing to be considered was, that when they came to break up the ground after it had been pastured for 8 or 10 years, annual ryegrass and clover were best adapted for the white crop. It was a common practice 20 years ago to take three white crops off the ground and then a hay crop; but as an old friend of his once remarked about draining, it was like letting the blood out of a man's body; it made the ground easier to work, but it needed more manure. Now they took two white crops and a hay crop, and then let it lie for six or eight years. When the land got a covering of manure with the second crop and again with the hay, and a covering of lime when in pasture, few artificial manures would be required. He agreed with Mr. Cunningham about the evil of having to send so much money abroad; and thought it would be better if landlords would stay more at home, and not put their land into the hands of agents who knew nothing about agriculture.

Mr. BONN (Sanquhar) highly approved of the suggestion of Mr. Whyte to give a more liberal application of manure to land to be grazed, so as, if possible, to make one acre do the work of two.

Mr. INGLIS, JUN. (Seed Merchant), said he had listened with great pleasure to Mr. Whyte's paper. He thought, however, he recommended too liberal an application of ryegrass seed, if they were to use at the same time natural grasses. He thought a bushel or a bushel and a-half sufficient. Half a bushel of Italian would be very suitable. He agreed with Mr. Whyte as to the benefit of using a greater variety of grasses for permanent pasture.

Mr. MCCRATH, grain-merchant, said his experience scarcely warranted him in making any remarks on this subject. He thought however that, as in the case of manures, certain kinds

of seeds would be found suitable for certain soils and climates; and it was one advantage of discussions of this kind that they got the benefit of the experience of gentlemen from all parts of the county.

Mr. STEVENSON (Silverwood) said he agreed with Mr. Dalglish in disapproving of ploughing-in the manure; he believed the manure to do most good when applied as a top-dressing. It was important, however, to apply that top-dressing at a proper time. Some put it on in the middle of winter, when there was no growth, and when, by the action of rains or frosts, a great part of its substance was wasted before there was any growth by which the plants could take up the nutriment. He believed it was a great waste of manure to top-dress unless when there was a growth by which the plants could take up the constituents of it. He agreed with Mr. Dalglish as to the bad effects on certain lands of too deep ploughing. He had seen cases where this had been done after stubble, where the land would not pasture. In the case of green crop, however, where the soil was wrought through and mixed together, deep ploughing might be beneficial. With regard to perennial and annual rye-grass, he believed in the district in which he was situated annual rye-grass would not do. He had seen cases in which it had been tried and failed, while other grass fields adjoining did well; and his opinion was that on heavy clay soils it was not suitable.

Mr. GEMMELL (Wyllieland) said he had, like Mr. Whyte, been doing a little in the way of sowing finer grasses, and he believed them to be very advantageous. Along with a little annual rye-grass they did well. Perennial rye-grass, being a hardier plant, was apt to overcome these finer grasses. He believed in both ploughing-in manure and top-dressing afterwards.

Mr. MONTGOMERIE (Leasnessock) said he differed from Mr. Whyte as to the ploughing-in of manure; but he thought the character of the soil would make all the difference. There had been a good deal of talk about applying manure largely; but where were they to get it? They would require to resort to artificial manures. It had occurred to him that in high districts in ordinary rainy seasons—such as they had had—when the land got very foul, sowing down without an oat crop at all might be advantageous. They could have a fine braird of grass, and fine pasturage for sheep in the latter end, and they could get the ground cleared of weeds. He would be in favour of natural grasses more than of perennial grass. In laying down land he thought there should be a good round on the ridges; and, where the lie of the land permitted, they should make their ridges run in the direction of south-west or north-east, so as to get the best exposure to the sun. He believed it was a great error having the ridges too broad; he approved of a breadth of from 12 to 15 feet.

Mr. MARTIN (Knockahinnock) thought if they were all placed in the same circumstances as to soil and climate, they would be found to agree on nearly every point. But these circumstances made all the difference, for what was suitable for the friable land at the shore, would not be so suitable for the stiff lands inland. He differed very much with his friend Mr. Dalglish about perennial rye-grass. Mr. Dalglish would approve of leaving the land naked, and letting nature cover it; but he never knew of much pasture as the result of such treatment as that, and he rather thought Mr. Dalglish would not fatten many cattle on the pasture he would get in that way.

Mr. MURDOCH (Kersepark) said he agreed with Mr. Whyte generally, but locality was a great thing in farming. His opinion was that ridges ought not to be level, even where the land was drained. He had had a field that was drained 14

feet apart and 34 feet deep, and he laid it down without any ridges; and although he gave it a good quantity of manure the crop was a very poor one. Next year when he came to plough it up again, he found out the cause. The soil was quite blue below the furrow: it had been a wet season, and the water could not get away and had soured. Had the ridges been round, he believed it would have been different.

Mr. TENNANT (Creoch) thought round ridges were necessary on heavy land. He considered it objectionable to plough manure deep into clay land. An application of phosphatic manures, such as dissolved bones or bone-dust, was a great improvement to grass.

Mr. WALLACE (Kirklandholm) was disappointed that some reference had not been made in the discussion to the proper time for sowing grass seeds. This was a very important point. He thought they should sow their grass seeds much earlier than they did. As soon as spring was in they should be put in, even though the weather might not be favourable; they did not require horses to go upon the land. He had found the end of February or beginning of March to answer very well.

Mr. YOUNG (Kilhearnie) said he had been delighted with the paper read by Mr. Whyte. With all respect for his friend Mr. Dalglish, he could not agree with him about laying down land for pasture without any seed at all. With regard to the employment of capital in agriculture, he thought that on land of high quality, a larger capital could be employed to advantage than on poor land. Mr. Macchi had stated recently "that if the land of this country was farmed as it ought to be, instead of needing to import grain, they would be able to export it." It would be a long time before they reached that result; but he believed a good deal more capital might be profitably employed on farming than had hitherto been put into the land.

The CHAIRMAN said in bringing this discussion to a close he thought he was justified in making the remark that Mr. Whyte's paper had given great satisfaction to every individual present. He begged, in the name of the club, to tender Mr. Whyte their best thanks for his paper.

Mr. WHYTE expressed his gratification at the flattering reception his paper had met with. He was still of opinion that the ploughing-in of farm-yard manure was the most economical way of using it. There was a certain action of the manure in its decomposition which acted on the soil through the carbonic acid that was evolved in its decomposition, that would help even the soil in which Mr. Dalglish said it had been lost and buried. He thought that if there was plenty of manure put in, the soil must succumb to its influence. To plough the manure in with a deep heavy furrow at first, it might be lost for some time; but if they brought three inches of the soil first into good condition and then two inches more, either by the influence of lime or other agent, then they would have five inches of good soil before they turned it down. But if they began by turning up seven or eight inches of cold soil, and put a little manure below it, it remained seven or eight inches of cold soil at the end. The soil must be gradually deepened. The breadth of ridges, he thought, should vary on different soils, according as the distance between the drains varied. Mr. Cunningham, he thought, had spoken in rather depreciatory terms of perennial ryegrass. Perhaps it would be difficult to find another grass to take its place. It had its disadvantages in running to seed in June and July, and at that time leaving the pastures a little bare; but by the addition of other seeds that objection might be obviated.

After a vote of thanks to the chairman, the meeting broke up.

FRIENDLY SOCIETIES AND THE POST-OFFICE AGENCY.

Taking into account the advance which the Post-office has already made in the direction of Friendly Societies, the facilities which it possesses for branch agencies coincident with postal districts, the trustworthy character of its officials, and that the system in question is at once of a highly beneficial character to the community in general, and the industrial and labouring classes in particular, and also that it is of

a remunerative character, we respectfully urge the advantage which would be obtained by a system of Post-office Friendly Societies. If such a system did no more than place a small percentage of healthy and industrious young labourers, and rescue them from their village clubs, from the grip of *The Black Bear*, or the mouth of *The Lion*, it would be worth the trial. And if there was reason for establishing Post-office Savings

Banks when the old savings' banks were for the most part trustworthy, and doing their work fairly, there is indeed much more reason for a system of Friendly Societies which would offer in the midst of the insolvent, fraudulent, and pauperizing societies, with which the country swarms, the means of independence to hardworking and honest labourers. The Post-office Banks, in addition to transferring much of the business of the older institutions, and opening up a new field of depositors, have superseded the necessity for forming new savings' banks. In like manner a Post-office Friendly Society, while it would secure the co-operation which the clergy and others would willingly render, would relieve squire and clergyman of all further claims in bolstering up, whether by patronage in the one case, or by preaching in the other, or annual subscriptions in both, insolvent or sharing-out clubs. Labourers would be advised to join the Post-office Society, and some of them at least, whose example will have weight with their companions, would take the advice. And further, such an institution would check the nefarious and heartless schemes of those who trade on the distresses and bereavements of the poor by means of mock Friendly Societies. On the break-up of a village club, the agents of such traps to catch men appear on the scene, and invite all parties to join their improved new London Society, which is so liberal, and withal so rich, that it will take in the sick and aged members of the club recently dissolved, at the same rate as the healthy and the young. The fraud is not discovered till claims for sickness or burial money are suddenly repudiated; that is to say, till illness or death strikes down the

broadwinner of the family; such heartless villainy "doth ravish the poor when it getteth him into its net." Give to these ignorant but honest men a safe and easily-understood system of insurance, and it will then be their fault, and no longer their misfortune, if they continue to be the victims of such frauds, or persist in forming new clubs of the kind to which they commonly belong. The system must be both safe and "easily understood of the common people." When it is remembered that educated minds are often puzzled by insurance tables, it can be no matter of surprise that the ignorant labourer, who studies the graduated scales of contributions and complex rules by the help of his pipe and pot of drugged beer, rejects the benefits of the safe but puzzling high-class society, and returns to the allegiance of the club which is in his opinion all fair and intelligible. In the matter of plainness there are few village clubs that may not furnish a good example to those who may be entrusted with the task of framing rules and regulations for such an institution. The anticipation is surely no unreasonable one that numbers of respectable young men, as they come to understand the advantages thus offered to them, will turn them to good account, and entrust their weekly contributions to the care of the Postmaster-General in preference to the custody of the village publican; and as they learn that their new Friendly Society is as safe as the Bank of England, and able to guarantee old-age pay, they will also avail themselves of this latter benefit.—From "Friendly Societies versus Beer-House-Clubs;" by the Reverend J. Y. Stratton, Rector of Ditton, Kent.

DRILL-SOWING.

At the last Meeting of the Fettercairn Farmers' Club, Mr. JOHNSTON, Cairnbug, read a paper on drill husbandry. He first hinted generally at the appliance of machinery to husbandry, then referred to the improvements made on the broadcast machine, showed the necessity for equal sowing, and proceeded—The favourable arrangement of equality in distribution of the plants and the thin weed is not attained in broadcast sowing, for however apparent the equality, there is in hand-sowing often an unequal distribution; and even in our best broadcast machines, from the undulating character of some fields and uneven surface in others, there is a considerable irregularity in the placing of the seed—that falling in double thickness in some places, while in others there are spots not few left without any. On looking along the line of the machine's track that is not so observable, but in looking across it, we are all familiar with the oftentimes great irregularity of distribution when examining the field. There is no better evidence as to the evil of unequal distribution than in the extreme case I notice of the thickly-seeded spots around where a sack of grain has stood on the field and grain has been spilled: it rushes up at first rapidly, and presents a very fresh green verdure, but so many roots require corresponding supplies of nourishment, and the supply being defective, they struggle through the season for a stunted existence, and when harvest arrives we have neither straw in proper quantity nor grain—the latter being a poor, shrivelled, good-for-nothing failure. This, we admit, is an extreme case; but it shows that where there is unequal distribution of seed there must be a tendency on a part getting too little nourishment, as in the case noted; while in that where there is a deficiency of seed, there is more than the plants can appropriate, and hence, as noticed, an extraordinary effort of nature to make the most of what is so dear her. She throws out a large proportion of additional seeds which come very unequally ripened to harvest, and hence are ungrainy samples and the seed of straws. An extreme sample of this we have in those parts of a field eaten by the grub worm. We are quite convinced by four years' use of the drill machine that it is of very great value on the farm: not only obviates in a great measure those defects to which we have referred, but in most seasons will produce a heavier crop, at least of grain, more equally ripened, and, as a consequence, a weightier bushel—we should be inclined to say by lb. over broadcast sowing—and all this attained by a sure economical start of one bushel less seed being used per acre. We have been in the practice of using 4 bushels of oats, often

only 3, and 3 bushels of barley, never more, per acre, and have had both crops quite thickly planted. While assured of the advantages and profit of using the drill, we have never experimented by measuring the land and weighing the produce from the respective machines; but since commencing to write our notes, I fortunately met a very painstaking and successful farmer in this county, who would not use an implement on his farm if by obtaining another he could gain sixpence by the adoption. He told us that five years ago he had the drill very warmly recommended, but before purchasing, got a loan of a neighbour's, and determined to test its value ere he spent his money on one for himself. He divided a field equally both as to area and quality of land—the one half he seeded by the drill with $4\frac{1}{2}$ bushels of oats per acre, the other he gave $6\frac{1}{2}$ bushels with a broadcast machine. During the summer the broadcast looked the thickest planted, and even when being cut his servants were all, save an old experienced one, in favour of the broadcast. When this shrewd old man was asked by his master why he differed from the others in opinion, he replied, "Ye never has a guid oot-turn gin their heads are see ravelled lookin—some lang, and some short." The man's reply was that of a keen observer of cause and effect, for every one who gives attention to it knows that an uneven field of grain, of whatever kind, at harvest time, never turns out to the quarters like one of comparatively equal length of stalk. And so in our experiment our informant told us that after a most careful harvest of both—the rakings of the two halves being kept separate—when thrashed and measured up, the drill-half produced 1 qr. 1 5-7th bushel per acre more than the broadcast one. We think this speaks for itself. As you anticipate, a drill machine was purchased of Ben. Reid & Company, which he has used ever since. Even last spring, so difficult to get two dry days on end, our friend sowed his whole crop with the drill, and looked somewhat astonished when we asked if he had no difficulty from the very wet season, replying, "Just as much as he would have had if he had used a broadcast machine." This very careful experimenter told us he regretted much he did not test the total weight of the two halves of the field; and, remarkable as it appears, from the subject we were handling when visiting him last month, he had in his barn at the time another experiment going on to completion. He had sown two divisions of a field by the drill—the one with 6 bushels an acre, the other with $4\frac{1}{2}$ bushels. The produce of the thinnest sowing was 6 qrs., that of the thick-seeded only 5 qrs. 24 lbs. per acre—the respective weights per

bushel 39½ lbs. the thick, and 40½ lbs. the thin sowing. This quite confirms our own opinion, gathered from the appearance of crops, although not tested by measurement and weighing. The clear inference we draw from experience, then, and the carefully-conducted experiments to which we have referred, is—that there is nothing yet known to compare with drill seeding for our cereal crops; but we likewise notice that seeding must not be in excess, else we shall attain a maximum crop. Mr. Johnstone concluded by warmly recommending drill-sowing to the attention of agriculturists.

Mr. GREIG, Harvieston, spoke generally in support of Mr. Johnstone's opinions, and gave the results of his experience

with the drill-sowing since 1868. He suggested that the Club should try to encourage drill-sowing by giving a prize for the best report on it, to be prepared from the results of experiments made on each competitor's farm, at sight of a committee of the Club.

A deal of discussion ensued, and ultimately the following resolution was minuted as the result:—"That this meeting is not at present prepared to pass any opinion whether it would be advantageous to adopt drill-sowing generally, but after the experience stated by Mr. Johnstone and others, they would recommend a fair trial."

THE CHESHIRE FARMER.

At the last monthly meeting of the Over Agricultural Society, Mr. THOMAS RIGBY, the Secretary of the Society, read a paper upon "Cheshire Farmers, their Present Position, Prospects, and Duties." He said: In the present position of Cheshire farmers there is a material difference in some respects from any period of their past history. On the whole the difference is in their favour when compared with what it was 50 or even 20 years ago. Draining has given them more control over their land. Boning has improved the character of their pastures in an extraordinary degree. Mechanical skill has greatly conduced to good cultivation and reduction of horse-labour, and improved dairy practice has facilitated the manufacture of cheese, while equally reducing house-labour. In these, and in many other matters, the present compares very favourably with the past. But I think there are some things in our present position which are altogether different from any period of the past of which we have had experience, and that render it more difficult to treat it wisely, and with profit. We have recently come from under the scathing influence of a fatal and disastrous plague among our cattle, and have suffered heavier losses thereby than had fallen to the lot of our forefathers for the previous century at least. Additional losses were added to us by the cattle plague restrictions of the Privy Council; by the transactions entered into with sheep as a substitute for dairy cows in our pastures: and by the diminished value of our corn crops consequent on the wet harvest season that followed. The next year—i.e., last year—our cattle were mercifully exempted from plague, and the enhanced price of wheat increased the profit of its growth; but the lower price of cheese, our staple produce, and the greatly reduced weight of its annual yield, owing to the stocks of cows on most farms being far below their usual number, made the net result of the year's proceeds little, if any, better than a loss on the majority of dairy-farm occupations. In the meantime the progressive farming of the county was held in abeyance. Labour was reduced as much as possible on most farms to lessen expenses. Draining altogether ceased for the time, and the bone merchant's business was greatly restricted. Large quantities of hay and straw that would have been consumed by stock, and yielded a great bulk of manure, were sold to go off the premises, with the ready assent of most landlords, to enable the tenants to meet their engagements; and more grass-land was broken up by the plough than would otherwise have been thought of; and the conjoined action of these calamities, the abated enterprise of farming for the time, the temporary cessation of active permanent improvements, and the increased outdoor labour expenses now entailed, concur, I think, in making our present position one of more difficulty and less promise than some periods of our past experience have been, or than it would have been, had it not been for the advent of that unfortunate rinderpest. Let it be recorded, with all grateful remembrance, that many landowners acted most liberally to their tenants in that sad calamity, nearly all of them promptly and cheerfully rendering all the help they could to their tenants to sustain them in their hour of trial, both mentally and pecuniarily; and that, if it had not been for this consideration, their present position would have been much worse than it is. Still, the fact remains that our land has suffered by the reduction of its farming improvements, and has been unduly poached by the quantity of hay and straw sold off, and the non-appliance of its usual dressing of manure.

Not that I think the hay selling has been so far practised generally as to have become a cause of deterioration of future production. Many a field mowed during the cattle-plague year was cleared by the scythe of old rough grasses that no stock would graze, and its appearance and profit since has been even better than it was before; but, as a rule, the manure-cut must follow the harvest-waggon in regular order (and here has been the chief failure), or the land, like an ill-fed horse, will not do its work so well or so profitably. One or two useful lessons have been revealed to us by the cattle-plague on this point, I think, on which we may do well to compare notes. May not hay and straw be sold to go off the premises in larger proportion than is usually allowed without damage, and rather with advantage, to the farm, if one-third or one-fourth the produce of the sales be applied in bones, or other substantial manure? And would it not be better to make a stipulation of this kind, in farm agreements on letting farms, rather than the old and arbitrary one, "No hay and straw to go off the premises?" Hay is more expensive fodder for stock on farms where good oats and turnips can be grown than they are, while it is doubtful if it is really as good for cattle. Five cwt. of bone manure per acre, after mowing, would, I think, more than keep up meadow or mowed land to its usual state of fertility, with better profit to the farmer than he could make by putting the hay he grows through his stock to provide manure. Especially would this be so with the surplus straw of a farm. The manurial value of straw in itself is but slight; and even as the vehicle of the droppings of animals it rather retards their quick and efficient use, by the necessity of waiting for its decay by fermentation in the midden; and if all the best surplus straw of a farm not requisite for the health and comfortable keeping of its stock were sold away, and one-third or one-half its production applied in good manures, the constant improvement of the farm must be much better provided for than it is by compelling its consumption thereon. To pursue this question further, however, would lead to unwarrantable digression, and it may suffice to conclude this part of my subject by saying, that although the Cheshire farmer has suffered heavily by the cattle plague, and feels its effects still, and that although his farm, as a rule, is not in such a good state as it would have been had he had his usual manures to apply to his land, and had worked with his usual energy the year after the plague, yet it is cheering and satisfactory to report that he now seems to be addressing himself to renewed enterprise with all his former earnestness and decision. I have been told by a large bone merchant, that the trade never was busier than it has been this spring, even before the cattle plague existed, and that orders are still pouring in, which is difficult to supply. Like a successful business man who has been overtaken by great loss amid increasing competition, but who addresses himself with renewed application and perseverance to retrieve his losses, so the position and purpose of the Cheshire farmer just now is very similar; subdued in spirit by his unusual trial, and with an additional line of care on his brow, perhaps he is yet strong, hopeful, and determined to do his best again, and under God's blessing to succeed. Let us now look at our present prospects, and here let me say I am not intending to assume the prophet's mission, or to attempt to foretell the future. Our predictions during the cattle plague have all failed of fulfilment, so signally as to stop every mouth from speaking declaratively of the

future; and my remarks must apply therefore to the present, and at the utmost to an opinion of the immediate future. Comparatively, and on the whole, the prospects of farmers are better now than was at one time anticipated. Dairy cows are more plentiful in Cheshire than we thought they could ever become again, when our stocks were dying at every homestead by the hundred weekly; and their price is far more reasonable than we then hoped for. Hay and straw and grain have kept their value contrary to our expectations, and still promises to be sustained at remunerative price. The arable farm has yielded good returns for early potatoes, sent to Manchester and other large towns, and it is hoped may do so again this year. While the grazier, it is also to be hoped, has seen the worst of the depression in price of beef and mutton, and may now look forward to better remuneration for feeding sheep and oxen. But the profits of the dairy farmer last year must have been small, as I have said, except in the comparatively few exceptional instances where very fine cheese of the best quality was made; and with the enormous importation of American cheese that now reaches our shores, and the increased quantity made in Somersetshire and other dairy districts, the price for average cheese is not likely to range high in the future, while ordinary or poor must meet even a worse fate; and we are all aware that the price at which cheese is sold fixes the proportionate prosperity of our county more than any other of its productions. Cheese-making becomes therefore the question of the day to us, and a word or two on this subject may be more useful than further speculation on its further price. Is it a fact that Cheshire cheese has deteriorated in quality? The trade affirms it has, and keeps repeating the opinion. Some farmers say not: the taste of cheese-eaters has changed, has become more exacting, and is not so easily satisfied; in fact, cheese consumers have become more particular, or, in plain language, more saucy than they once were. Without undertaking to say which of these opinions is most correct, it seems to me they amount to the same thing in point of fact: both prove the existence of a defect—one by assertion, the other by admission—which it will be well to study, to amend rather than stand debating the precise point of fault. A certain class of cheese called fine cheese is wanted in the market, for which a good price will be paid, call it better cheese, or cheese of another flavour or character; the precise terms matter not; the object of the maker is accomplished, I apprehend, if he gets the top price. There is a standard to work to, shortly and clearly defined, in the words "fine cheese," and the prospects of Cheshire dairy farmers depend very much upon the position they gain in reference thereto. Cheese-making is a simple operation in itself, but liable to such varied results in its manipulation that it requires unusual skill and application to make it first-class. Milk in the hands of one dairy-maid is made into cheese worth 80s. per cwt.; in the hands of another its produce may not be worth 60s. or even 50s., and this oftentimes when equal pains, equal labour, and equal anxiety to make a superior article have been taken, under equal and perhaps greater advantages. Whence arises the difference? Is a question frequently asked, and answers various and many have been rendered by essays and lectures, both by scientific and practical men, and by animated discussions in more private life over the tea-table by dairy-maids of varied ability; but so far as regards an answer of general application there is no instructive or convincing reply; and it is most difficult no doubt, if not impossible, to render a satisfactory reason in words. I am not at all sure that the establishment of cheese factories after the American mode, which we had so ably advocated last month, would do this perfectly; it might and probably would aid to a greater extent than is yet accomplished, judging by the results in America, as reported in their papers, factory-made cheese always having a higher price quoted than farm dairies; and such factories here would have only intelligent careful men or women as foremen or managers, who would be possessed of some knowledge of the leading principles of good cheese-making (the number of which it would be easier to get than what would be wanted at all our farms), whose sole business and interest would be engrossed in making the best, and who, by carefully noting the results of various modes of manufacture in all their stages, would gradually master the question, and, by adopting the best modes from intelligent perception and with good judgment, would necessarily be able, or be more likely at least, to make a first-class article than is done now by a majority of cheese-makers,

who seem to go the same round of proceeding in all states of the atmosphere, and without thought, if not without care of the result. This of course might be done in an ordinary dairy, and some such method should be followed by every maker of middle-class cheese who desires to improve; or better still, if such dairy-maids or their daughters had the advantage of seeing the mode of manufacture followed by those who make the best prices for a month at least, or could get such persons to make a few cheeses in their dairies, it would tend more to improvements in cheese-making than all the teaching of books, or even of all oral instruction. It is whispered—and I give it only as a matter of rumour, please to observe, as I would not for my future peace and safety have it supposed that I myself regard it as at all possible or likely—but it is whispered sometimes that the greatest barrier to improvement exists in the self-satisfied idea or opinion of many dairy-maids that they are as competent to make good cheese as any other body, and have no need therefore of further tuition or instruction. Of course, there is small hope of amendment where this feeling prevails, if it does prevail anywhere. On this subject, as on all connected with farming, we ought all to be learners; perfection of skill in any work, or even the high grounds reached by many around us, is a long way higher up than some of us shall climb before old age or death stiffens our joints, even if we use the utmost diligence; and I really cannot think such feeling of self-sufficiency can be cherished by any dairy-maid or farmer's wife, while on the other hand we all know that intense anxiety and much sorrow of mind are constantly present with some who do their very best, but confessedly fail. These remarks will not be considered irrelevant, I trust, or beside the question we are discussing. But from fear of wandering further away, let me conclude this part of my paper by saying, in justification or apology, that the prospects of dairy farmers depend almost wholly on the quality of the cheese they produce, and the difference between success and failure here will be the indication of a prospective, pleasant, happy, and prosperous career, or the reverse of it altogether. The duties of farmers is the last part of the question on which I propose to treat. The first thing I mention as the duty of every farmer is that he should farm his land well, and try to make it as productive as possible. Having all the chief expenses of a farm fixed, such as rent and rates, will it not pay better to grow heavy good crops rather than medium or poor crops? A little more manure and a little more diligence in cultivation is all the extra cost between the two results. And with dairy stock, the comparison is even more in favour of liberal treatment and extra care; for the capital invested is the same in amount, and the labour in winter nearly as costly, while the annual make of cheese per cow, from an ill-fed, badly-treated stock may easily average one cwt. less than that which is attained by our best feeders and managers. "He that soweth sparingly," said the Great Teacher, who drew many of His best illustrations from the practice of husbandry, "shall reap also sparingly; while he that soweth bountifully shall reap also bountifully." I am not sure that we are any of us doing as much as we might do if we acted more by this rule. The crops I saw on some farms near LIVERPOOL last year have led me to think that we limit the productive power of our land within much narrower bounds than it is capable of reaching. In the township of Speke, and some adjacent districts, the value of some annual crops as they grow in the field is worth as much per acre as half of the land of Cheshire would sell for by auction at an open sale; and while there is something due, no doubt, to the adaptation of the soil for the growth of such crops, and something also to the climate, the land lying near the sea, the greatest credit must be given to its good cultivation and regular liberal help from suitable manure—I say regular and suitable, as well as liberal, please observe; and it strikes me we have very much to learn on this point. Is not manure applied in excess to some fields, some years, to their damage? May not this explain the reason of mildew, or of weak-stalked grasses, and straw, and light, flabby corn. Do we not sometimes use a stimulating manure, such as guano and similarly-manufactured substitutes, when it would be better to use something that had more abiding nutritive quality as food for our crops? And, again, may we not err by applying too much solid food of the same kind too often—say bone manure, for instance? You will think me very bold, if not reckless, in

expressing such a doubt of a fertilizer to which Cheshire owes more than is easy to estimate, and which we are in the habit of saying can never be applied to the wrong crop, nor at the wrong time; but our land is not in the same state now as it was when the application of bones was first made, and when they produced such wonderfully-renovating results on old pasture lands. Such land had been drained of its phosphates in the growth and keep of cattle, and by exportation out of the county in the shape of veal and cheese for long years; and when these were restored in the shape of bones, the grasses put on their richest green, and the flowering plants arrayed themselves in their gayest colours, and seemed to rejoice together as those who had found great spoil. Bone manure was to land, then, what the fat of the seal would be to the Laplander who had been deprived of it for some time, or like a supply of salt to the tribes that subsist wholly on fish after a time of deprivation of this essential seasoning to their food. But now that the excessive exhaustion of our lands of phosphate of lime has been partially restored the case is different, and the opinion that bone does not answer now as well as it used to do is being often expressed by farmers, and appears to confirm the doubt I have suggested, and to enforce the idea that some other agent should be used to evoke the latent fertility of our farms. And here shall I startle you yet more, or make you more impatient, if I suggest that lime should be tried now on those grass fields that don't answer to bones as they were wont to do? Bones and lime have hitherto been regarded as decided antagonists, and one has been supposed to neutralise the action of the other. But—and when one begins to doubt, how far we may go wrong before we are aware of the distance wandered! and yet to doubt sometimes is to take the first step towards the truth—if the action and use of lime in agriculture is to decompose organic substances in the soil as well as to mingle with the various acids which produce sourness of herbage, and change their evil into good, as chemists tell us it does, why should it not become specially useful in further decomposing those particles of bones which must be incorporated in the soils of all boned lands, render them more soluble, and dispose them to give out the remaining portion of their vitality as a manure? I have the authority of our aged friend, Mr. Rothwell, for saying that he has seen lime used with great advantage on soils that have been boned, and I am trying it myself this year in two ways—in a pure and caustic state, and also mixed with surface soil as a compost, upon a piece of grass land which was heavily boned some years ago, but which now produces a rough dry grass that seems to have no nature in it, and am inclined to think it will create and sweeten its pasture, and so save it from the plough, for which it seems otherwise to be crying out. There is another point of my proposition affecting good farming by manuring which, I think, is essential to observe in order to its discharge. Manure should not only be suitable and liberal, but it should be applied regularly, also, to bring out the best results. Year by year should all our land be manured if suitably cropped, just as our horses are fed day by day. There is much similarity between our own nutrition by food and that of the land by manure. Overload the stomach, and you stop or impair the process of healthy digestion. Stint it or deprive it of food for a few days, and you are in a restless craving state, which soon settles into prostration and weakness. Take unsuitable or indigestible food in any quantity, and you derange healthy action and produce disease; but partake of wholesome diet periodically, not in excess, rather under satiety than repletion, and in the ordinary circumstances of life you will be healthy, vigorous, and equal to any labour. The large crops I have spoken of were all growing upon farms where good farming and liberal regular manuring had been the practice of years; and in the field or meadow near our own homesteads which is regularly manured, as it can be done with less cartage, we have an illustration of what such practice would do if applied all over the farm; and if all land was treated in like manner the results would be equally gratifying, and perhaps more satisfactory than any that have yet been attained. The working or cultivation of land, rotation of crops, stock keeping and feeding, and many other practical matters would come under remark appropriately here if time permitted; so also would security of tenure and compensation for unexhausted improvements, especially would mutual regard and confidence between landlord and tenant be desiderated. There is danger, says many an enterprising tenant, of my landlord thinking I have my farm

too cheap if I grow large crops, or that he will think I am unduly exhausting the soil; but the fact is, and all practical landlords know it well, that where there are large crops grown, there must of necessity be skilful industrious farming and liberal manuring, and that under such arrangement the land itself will improve and not deteriorate, however great the crops, while the expenditure being double and treble the amount of rent, they know, or ought to know, that such results must be credited to ability and capital rather than to land alone, but ever so good. These and other matters, however, I must pass, merely reiterating my proposition that it is the first and chief duty of a good farmer to develop the productive powers of his farm in the highest degree. My second remark under this head shall have reference to a matter of precaution or forethought. While successful farming is intimately connected with liberal, enterprising action, it will also be much aided by prudent arrangement for the future. A skilful general does not bring all his forces to join in the first onslaught of battle, but keeps some of them standing in readiness to act in support of any portion of the main army that may be too hardly pressed; and in the disposition of our varied agencies in farming, it is only a matter of prudence to hold some of them in reserve, and to arrange that they be in their places, ready to fall back upon when wasted. One provision of this kind, which amounts to a duty, is much aided by insurance companies. By the payment of a small sum annually a provision against loss by fire—always an uncertain agent—may be made, or a sum of money may be insured for a widow or children in a similar manner, to be paid at the decease of the insurer. I mention these matters, as I fear both are neglected much more than is wise or thoughtful; and as an introduction to the remark that it would be well if we could obtain similar insurances against loss by disease in our stock, more especially against pleuro-pneumonia and the dreaded cattle-plague. Our experience of societies with these objects has certainly not been very happy or satisfactory in the past; but there must have been something learned from it that would help us to form a scale of annual premiums which would meet ordinary losses. The idea suggested by Mr. Atkinson to our meeting at Crewe, with which the newspapers have made you acquainted, is worthy of consideration and trial. A county society on mutual principles could be conducted at much less cost of management than a proprietary company; it would also be less exposed to imposition, and would, if it commanded confidence, embrace as many members as would render it comparatively light to each to bear a proportionate share of the losses of the sufferers, if it was supported liberally, as he proposes, by landlords as honorary members, and by tenants as a prudent duty to themselves. The next matter I name is one which is more a public than a personal duty. Ought we not to form chambers of agriculture to protect and advocate its interests? Our merchants have their chambers of commerce for almost every branch of trade in which they meet to discuss any subjects that affect the welfare of their particular business, and, after resolving upon a given course, do their best unitedly to effect their purpose; and by such union they have accomplished much benefit to trade. Another call to duty that I think our interests are making upon us will perhaps startle some of you with its novelty, but I hope not with its propriety. Should not one of the six gentlemen whom the county is entitled to send to the new Parliament next year be a practical farmer? The proposition may be considered very bold and presumptuous; but in the part borne by Mr. Read, the hon. member for Norfolk, in the present Parliament, the propriety of the step is amply illustrated; and if such a man as he could be found and sent there from half the counties in England, the advantage to agriculture would be immense, and not beyond what it is legitimately entitled to exert. The legislation during the cattle-plague would surely have been greatly aided by their counsel; and many questions must arise during the transition state of things that will be induced by the Reform Bill on which they would be able to advise effectively. The idea is not my own only. Many men in various parts of the county have assented to its desirability, and have remarked that we had on the list of our committee a gentleman in every way qualified to undertake the office; and certainly, if sound judgment, intelligent and liberal views on all public questions, high character, long and disinterested service, and experience as member and vice-chairman of a board of guardians and highway board, as commissioner

of turnpike-roads, and as a public and foremost man in the service of agriculture combined with the respect of all who know him, including very many of our county gentlemen and aristocracy, be a recommendation, then I feel sure you will agree with me that in Mr. Dutton we have all these qualifications, together with an ability to express himself clearly and forcibly, which is but rarely possessed. I make this statement spontaneously, and, indeed, am taking a liberty in some measure with our respected friend and chairman, as he discountenanced the suggestion when I named it to him some months ago, and expressed himself adverse to its entertainment; but he will pardon my freedom, I hope; and you will please consider the proposition as an evidence of my desire to promote our fair representation in Parliament, rather than regard it as the utterance of officious intrusion.

Mr. WOOD had had a few thoughts while Mr. Rigby had been reading his paper. He was inclined to the opinion that this unfortunate cattle-plague, after all, might be for the best, because he saw that it would force an improvement upon the system of letting farms. He remembered a prize being offered some time ago, to be given to the attorney who drew up the best form of agreement for the letting of farms, and he was very much disappointed that more did not come out of it. He did not think that lawyers were the best men to make out agreements for farms. He had drawn out several himself, which had been proved to be binding, and the more simple they were the better they were. Why he said the cattle-plague would be beneficial to them was this: Since the cattle-plague they had been allowed to sell hay and straw. He had always been of opinion that a farmer ought to be allowed to do this, either when his crops were small or he was suffering in some other respect. To allow it would be a benefit not only to the farmer but to the community at large. But he would make it a condition that for every ton of hay sold off he must put upon the land 2 cwt. of bones. If a man was permitted to plough where he had a mind, if a repetition of bones took place it would not suffer much. If he was allowed to plough where he liked, providing he would put upon the land so much bones for every acre ploughed, he thought it would be to the landlord's advantage. He had had a strong impression upon his mind for many years respecting landlords having big farms, or putting two farms together. If they were made less, and a homestead erected upon each, there would be a living for more families, and the improvement of the land would be greater, as it was an old adage which he had heard when he was a boy that "The nearer the midden the better the land." That was his impression in regard to farming.

Mr. MORETON endorsed nearly every opinion which Mr. Rigby had brought before them. There was thing in which he did not agree with him, and that was with regard to the use of bones. If his land was suffering from being overboned, he said bone it again. He never knew land to have too much bones. As to putting bone upon it, if he did it once, he would not do it again. There was something to be said about cheese-making. They might depend upon it that every dairymaid did her best, but there was some little action that she did not know of that caused it to be bad. It was not the dairymaid's fault. Bad cheese often cost more work than good cheese. It was like getting hay. With regard to their position as tenant-farmers, he thought their landlords were pulling them up now. He knew one landowner who was considered a very respectable man, who had pulled a farmer up three times for his own improvements. That was a man within one mile of Tarporley. That was not the way to treat a tenant. Farmers were also kicked by their labourers, who were advancing every year. Wages were advancing both of servants and agricultural labourers. Why that was he could not say. The food of those who lived in the house cost the farmer more, yet their wages were 20 to 30 per cent. higher. Then their rates were higher. The assessment was made what the committee thought fit, and it was not worth while for them to go to appeal against it. He had been assessed at £100 for some land which he had never paid £100 for in his life. He let a farm of his own at £70, and it had been assessed at £71. It was not worth while to go to Knutsford to appeal for the sake of £1. With respect to the third member for Cheshire, he approved of the proposal to send Mr. Dutton. He thought he would go for the good of his country, and he hoped the time would soon come when he would be elected member of Parliament for the county.

Mr. DUTTON thought the Assessment Committee were really anxious to do their duty, but they were placed in a position in which it was impossible to please everybody. They had a very disagreeable duty to perform. They should not be blamed, and he thought gentlemen ought to go before them, and give them information. He could give an instance of a farm which had been let for 22s. an acre, but now £2 per acre was wanted; and it was very unfair to the public that a farmer who had a cheap farm should have cheap rates as well. It was not fair to the next tenant, who might pay a higher rent, and who might reasonably come forward and say that the farm of his neighbour was as good as his.

Mr. WRIGHT thought that the relaxation of the stringent rules for farming, allowing them to get a little by the disposal of their surplus stock, would be a great advantage, and it would cause them to lay it out, because they knew that if a farmer got hold of some money he was desirous of laying a little out upon the improvement of his farm; but if he could not get it he could not do so. He really thought, that if there could be a County Assurance, and Cheshire landlords would unite with their tenants in case of loss, and an assurance that would take in landlords of a certain liberal spirit, to unite with tenants under certain circumstances, it would be very well. If there were ten extensive Cheshire landlords willing to join, and something could be suggested to bring them in under a certain scale, and also all landlords who were willing to assist their tenants in any way, he thought a very effective assurance could be established. It would require the landlords to be of one mind, and the tenantry to come in. Suppose the landlords did the same as Mr. Lloyd used to do. He allowed a certain per-centage, and then the tenants assisted. There were other considerate landlords in Cheshire besides Mr. Lloyd, and it would be requisite that they should be all of one mind. He thought, if this was done, the Cheshire farmer would be more comfortable than now, standing unassisted as he did. Pleuro, for instance, was very bad to deal with, and if a man had the sympathy and suggestions of his landlord, they would have a voice in the repurchasing of his stock, and he would have the advice of his neighbours, and while contributing to his own comfort it would be an advantage to the district.

Mr. DUTTON said he would like to allude to one or two points in Mr. Rigby's paper. With regard to selling off hay and straw, he quite agreed with what Mr. Rigby had said, and he thought that if they could by something induce a more liberal system of agreements, it would be a great advantage to both landlords and tenants. He thought the time had come for that. He knew there was a great difficulty, because among such a large body as farmers there would now and then a man creep upon a farm who would take a most unfair advantage of a landlord. He knew that there were some men who had so put landlords out of temper by their conduct, that the landlords had determined to adhere to the strict letter of their agreement in future, and it had led some landlords to relinquish their word-of-mouth agreements, and make stringent written ones, to guard against this sort of thing as much as possible. If he was going to take a farm he should insist upon it that he should be allowed to sell the hay and straw off, which was not needed for consumption upon it, for money to lay out in other things. With reference to manure he thought those farmers in the neighbourhood of Liverpool referred to by Mr. Rigby possessed the means of getting manure upon very favourable terms. They certainly got very large crops. In the neighbourhood of Warrington they could get manure very cheaply, and in some places where the canal or river passed through the land they could get it with little more trouble than carting it upon their farms. There was no doubt it would be an advantage to treat the soil liberally. It was the most honest thing in the world. If they treated it liberally it would repay them fully. It was a question as to whether they should employ bones as much as some farmers had thought. He thought it better to leave a small portion of a field untilled, and when he himself had done that he could assure them that he had been much surprised in the application of bones or manure. Some years ago they would remember that their friend Mr. Nield was praising manure which he had been trying—the Eureka. He (the speaker) tried it, but it was of no use whatever. Last year he tried bones, and in doing so he left one or two places unboned, and he was very

much surprised to find that there had not been a greater alteration. He thought that every farmer ought to leave a part undone, because if he put the bones all over he could not ascertain the difference. He tried it first upon a turnip-crop, and if he had not tried it he should have thought that bones answered admirably. But when he came to take up his crop, he found that the part which had not been boned was quite as good as that which was. He could not agree with the opinion expressed by Mr. Moreton as to lime. He had some land upon which the grass had become sour, and he had tried bones for a long time, and last year he put lime upon it, and no man could see where the lime had gone. With regard to Chambers of Agriculture, it was a matter of very great importance to them to provide means whereby farmers could be brought together to talk over what was being brought before the House of Commons, which they could not do in these small meetings, because they were all neighbours and saw very much with the same spectacles; and if they could be brought together from all parts of the county it would be a very great advantage. There seemed to be a tendency to increase the duties performed by Boards of Guardians. They were a ready means of getting at the public pocket—that was it. They had had a large increase in the amount of money passing through the hands of the Board at Northwich, but that arose not because there was more money being allowed to the poor, but because of many other things being put upon them. They now had to deal with ordinary nuisances. Then there was the smoke nuisance, and the Board of Guardians was required to spend money until this nuisance was abated, and they might

depend upon it that it would require a good deal before this great nuisance to the land was done away. Then there was the assessment. If a man had got a cheap farm, it did not follow that he ought to have a cheap rate as well. He was better able to pay a heavy rate than a man who had a heavy rent and a heavy rate to pay beside. With regard to their servants, he hoped that every one of them would take to themselves what had been said by Mr. Rigby, and endeavour to look at it in its true light. Whether they liked it or not, wages were going up every year, and they had to bear with their servants, and they must be as considerate as possible, and they ought to set them as good an example as possible in their own personal characters, so that they would not see in them any inducements to vice. He would move a vote of thanks to Mr. Rigby for the very able paper which he had given them. With regard to farm agreements, he thought there ought to be more liberal covenants; but if he was a tenant-farmer he would always have an agreement, and he thought the man was a very bad judge who laid out his money upon very bad security. Don't take any man's word without having it in black and white. He would say to every tenant-farmer, "Have an agreement; and if you have not such clauses in your agreement as to protect you, keep your money in your pocket." However much a man's word might be depended upon, circumstances might arise which would cause the position between landlord and tenant to become completely changed (applause).

A vote of thanks to Mr. Rigby concluded the proceedings. The attendance was very small.

SUMMER GRAZING AND CATTLE FATTING.

The unusually high prices to which meat has attained during the past three years would lead to the hypothesis that something further is to be, or must be, attempted to increase our supplies, and thus provide more animal food for our rapidly increasing population—for, be it borne in mind, a population which every fifty or sixty years nearly doubles itself. "In England it takes but little more than from fifty to sixty years to double the population: in France it takes about one hundred and ninety-eight years." If this is really a fact, it becomes a paramount duty upon every occupier of the soil—yes, and every owner—to strive and to aid to the very utmost to force production, so that the limited area of our happy land, our island home, shall be made to feed as much of the population as possible. I have already written upon forcing the production of potatoes and mangolds as eminently conducive in providing additional food for the million. I now desire to try and suggest some extra, or rather extraordinary means, whereby our meat supplies may be augmented far beyond what they have ever yet attained to, and that with profit to the producer.

I am well aware that this opens out a wide and interesting subject, *i. e.*, the breeding and fattening of farm stock, the suitability of various breeds to their peculiar localities, their age and maturity when fattened or to be fattened, and various minor matters. I, for my present purpose, pass over all this, and presume that each locality does possess farm stock suited to its requirements, *i. e.*, good sized cattle and sheep for rich and fertile districts, smaller kinds for inferior soils, and mountaineers for bleak hills and mountain pastures, otherwise my remarks will fall without point, and I should be fighting against nature to urge the grazing or fattening of stock in localities entirely unsuited either in soil or climate for them. It would be absurdly ridiculous to urge a breeder of Lincoln long-wool sheep, or a breeder of "Cotswolds," to send them to mountainous pastures to be fattened, or cattle equally inapplicable. I therefore take the breeds of both cattle and sheep as I find them now located throughout the country, and speak of them accordingly.

My first point, or suggestion, is this: That it is impolitic and unprofitable for breeders of farm-stock in bleak, hilly, or mountainous districts to attempt to fatten them at all on the natural grass or food of these hills or mountains. Their duty and their policy are best shown by breeding and rearing all they possibly can, for sale as store animals to the occupiers of more suitable districts for fattening. I say nothing against the use of artificial aids to fattening being applied in these high climates but this—that it is far better to make a very liberal use of artificial food, for the rearing of many more of this farm-stock, rather than to fatten them for consumption. It is not the proper department of farm-management for a mountaineer, unless he possesses some appropriate valley-land for such purposes; and then he may derive great advantages from a judicious use of fattening foods.

My next point or suggestion is this: That occupiers of inferior and medium soils must do their very utmost to promote their country's prosperity, in which I include the pasturage of annual or biennial rotation seeds and clovers, the permanent pasturage on farms suited to the four and five-course shifts or rotation, and the down, wold, and hill-pasturage of the kingdom. Here, again, is a wide field: Nearly every kind of farm-stock is bred and fattened upon these rotation-managed farms in every part of the country; and it is beyond my powers to say which particular breed either of cattle or sheep is most profitable for them or the district in which they are situated. My aim is to suggest more extraneous means and modes of management, to promote the augmentation and permanent increase of our meat-supplies. This will mainly depend upon a more novel, careful, and systematic management, and in a greatly increased expenditure in nutritious and fattening foods. My ideas of a more novel, careful, and systematic course of farm management embraces a great deal not generally followed in farm practice, which, at the risk of being deemed empirical—yes, fanatically enthusiastic, if you please—I shall indulge myself in stating, or rather suggesting. It is only of late years that so much attention has been

given to other than what may be termed natural food for stock—I mean the various pasture and cultivated grasses and clovers; the many herbage plants, as lucerne, sainfoin, chicory, bromus, and trifolium; and the crops usually grown as winter food, *i.e.*, mangolds, swedes, turnips, rape, cabbage, and kohl-rabi. Now these crops I would suggest should be more extensively grown than heretofore, and that all inferior grass lands capable of bearing these heavy cultivated crops should be appropriated to arable culture, with the ultimate view of a frequent recurrence of these crops in due course with clovers and cultivated grasses. Land thus appropriated to, under good management, produce a much heavier weight of food for stock, and bear cereal crops besides. Natural grasses will produce from five to twelve tons of grass per acre. Artificial grasses and clovers will far outdo this: some of them—*i.e.*, Italian ryegrass, broad clover, tares, and trifolium—can, under irrigation and liquid manurial dressings, be made to produce from thirty to seventy tons of good food per acre. The great thing for an improved summer grazing is to force the soil to produce this superabundance of grass, as is done in producing roots and corn crops; and it may be done. What is the small area of our country compared with the wide world? Guanos and other manurial aids can be imported in sufficient abundance for every requirement for these purposes. Frequent dressings of liquid manure judiciously mixed and applied are efficacious. Superphosphates or guano, nitrate of soda, soot or salt, mixed with ashes, may be sown dry in showery weather, or to be watered freely. I am suggesting these means to force the production of an increase of grass and summer food. But it may be asked, What has this to do with summer grazing? Well, grazing is but the act of feeding on grass. It is not absolutely necessary that cattle or sheep should walk about the fields, trampling down more than they eat, for that purpose, as is now the general custom. In some countries, and districts of our own country, the quickest and most economical way of fattening stock, as respects the consumption of food, is to have them under cover or in yards with sheds. How could our large cow-keepers graze such large herds in fields? Nearly all of them are in sheds, and the food is brought to them. The expense is not great, and is amply compensated by the increase of grass from its undisturbed growth. No trampling, no droppings, no continuous cropping off in its early stages of growth; besides it improves in nutritious quality by age, or rather as it comes to the scythe. After each cutting, a liquid manurial dressing should be given, taking care that the

weather is suitable, and to avoid applying it under a hot sun. Nitrate of soda may be sown at any time—the night's dews would melt it frequently. In this way a vastly-increased weight of grass can be obtained—the only important question is the cost. This, I think, may be readily estimated. A man with the occasional daily use of a horse and cart for an hour or two would provide food and attendance for twenty-five to thirty cattle—say, the cost from 9d. to 1s. weekly per head. The mode of fattening and management must be very regular. The cattle should be in two stages of growth or condition, or fattening and store cattle—the older cattle to take the best keeping, the younger or more backward the residue or leavings. My suggestion then is that, as far as practicable, the fattening of cattle, and in many cases the fattening of sheep—not store-grazing—should be in yards or sheds; that the grasses for provender should be daily mown, and be supplied to them with great regularity, care, and cleanliness; that liberal rations of cake, corn, meal, or other foods, be invariably added, with a fair quantity of pure water; and that they be kept as cool and comfortable as possible. The lairage may be straw, dry earth, ashes, or other absorbing substances applicable for future manurings. Sheep would require very careful attention, and their lairage must be kept free from heat and fermentation, or their feet soon give way. Their food similar, supplemented by early cabbage. The fold-yard manure thus made in great abundance would be admirable, and most beneficially applied to these mown lands in the autumn or early winter. The dressings should be very liberal, and the warmth and fertility such a covering would give to the land would cause a much earlier and stronger growth in the spring—in fact, the liquid manurings or the dry manurings, supplemented by ample waterings or passing showers of rain, with the above liberal fold-yard manurings, would continually improve it. But we should require immense supplies of linseed and linseed-cake, cotton-cake, rape-cake, and locust beans. The liberal use of bran, oats, barley, beans, peas, and Indian corn, would cause large importations of inferior grain for feeding purposes. This could not fail to be advantageous: far better for English breeders to import food for their increasing stock than to import stock already fatted. Nor would I underrate the manufacturers of artificial foods. Impositions and extravagant charges may be demanded for such foods, but eventually these matters right themselves. No doubt a judicious admixture of fattening substances or ingredients is highly beneficial to fattening stock.

DAMAGE FROM STEAM THRASHING MACHINES.

A case of considerable importance to the owners of steam thrashing machines and agriculturists has recently been the subject of discussion in Essex, arising out of differences between Mr. Golden Goodey, of Paddock's Farm, Chappel, and Mr. Zachary Pettitt, of Fordham. It appears that Mr. Pettitt, a farmer and the owner of several steam thrashing machines, was employed in December last by Mr. Goodey to thrash some produce; that the machine was on Mr. Goodey's premises on the 12th December, that the men left off work between the hours of 11 and 12, and were soon seen by a passer-by to be placing fuel in the furnace of the engine for the next day's consumption; that shortly after two o'clock a neighbour observed the tarpaulin which covered the engine to be on fire; he gave an alarm, but the fire, having communicated with the straw, spread very rapidly, and upwards of £500 worth of corn and other produce was destroyed. Mr. Goodey was only partially

insured and received from the insurance office about £100, and a further small sum for damage to his furniture. Considering that his loss had been sustained through the negligence of Mr. Pettitt's servants, he, through his solicitor, Mr. Beaumont, of Goggeshall, applied for compensation; but Mr. Pettitt considering he was not liable, referred the matter to his solicitors, Messrs. Turner and Deane, of Colchester, and as the parties were friends and neighbours the professional gentlemen concerned agreed to submit the matter in difference to the arbitration of Mr. William Howard, solicitor, of Colchester, and Mr. James Hardy, land agent, Tendring, who appointed as their umpire Mr. James Josselyn, land agent, of Stratford St. Mary, Suffolk. The arbitrators have made their award, the substance of which is—that the fire which so broke out upon the premises of Mr. Goodey, at Chappel, did occur through the negligence of the servants, some or one of them, of Mr. Pettitt

whilst acting in his employ, and whereby Mr. Goodey sustained considerable damage, and they did thereby adjudge that Mr. Goodey had good cause of action against Mr. Pettitt in respect thereof. And they did thereby also award, order, adjudge, and determine that Mr. Pettitt should pay to Mr. Goodey the sum of £357 7s., as a full compensation and recompence for the damage which they found and determined to have been occasioned

by the said fire, in consequence and by reason of the negligence of the servants, some or one of them, of Mr. Pettitt; and that the said sum of £357 7s. should be taken and accepted by Mr. Goodey as a full compensation and recompence for such damage accordingly, and also in full satisfaction and discharge of and for all the said matters in difference referred as aforesaid.

CORNWALL CHAMBER OF AGRICULTURE.

A meeting of this chamber was held at Truro, on Wednesday, May 29, for the purpose of discussing the questions of the establishment of County Financial Boards, and the Turnpike Trust Bill, now before Parliament. Mr. Deeble Roger was called to the chair.

Mr. J. T. H. PETER moved, "That the proposal, by a bill now before Parliament, to burden the rates, as at present levied, with the expense of maintaining the turnpike roads, and the payment of the turnpike debt, is unjust."

Mr. REGINALD ROGERS seconded the resolution, which was then put and carried.

The CHAIRMAN said that the next question for consideration was the establishment of County Financial Boards, and he then referred to the two bills which had been introduced into the House of Commons by Mr. Wyld, the member for Bodmin, and Sir W. Gallwey, for establishing County Financial Boards, both of which had been referred to the same committee; and having briefly explained the object of the former, he said that as they could not tell what form the bill would have assumed when it again came before the House, it had been thought by the council that the course for the Chamber then to pursue was to refrain from expressing any views as to the details of either bill until it had passed through committee, and to direct their attention to the expediency of establishing County Financial Boards, and the principle on which they should be constituted.

Mr. BRYDGES WILLIAMS proposed the following resolution: "Resolved, That it is just and expedient in respect of county rates that the ratepayers should be represented in a County Financial Board, composed of magistrates and ratepayers who are not magistrates, to such an extent that the sentiments and opinions of the whole body of ratepayers may have due weight in determining the amount of county rate to be levied and the purposes to which it is to be applied, with the view to all prudent economy consistently with the practical efficiency of county establishments being attained. And that it is desirable to reserve all expression of opinion by this Chamber of Agriculture as to the details of any bill in Parliament on the subject until the same shall have undergone the investigation of a parliamentary committee."

Mr. JAMES PAUL seconded the motion.

Mr. ROWS (Lanreath) said that he differed entirely with the latter part of the resolution and with the opinion that had been expressed by the Chairman and Mr. Williams, as he considered that that was the proper time and place for discussing the principle of the two bills now before Parliament. It had been said that any Financial Boards that might be established should have the principal management of the county finances; but if they looked into the bill of Mr. Wyld, they would find that the whole power over the county expenditure was retained in the hands of the magistrates. It showed that the County Financial Board could not alter the salary of a single officer of the gaol or asylum without first reporting the matter to the magistrates in Quarter Session, and then if there should be any dispute between the magistrates and the board upon the subject, the Home Secretary was to be called in to decide. He considered that that provision of the bill, if adopted, would give rise to constant bickerings and disagreements between the magistrates and the board. He contended that the provision by which the justices were to elect one-half of the board from among their number was unfair, because they would also be enabled to vote as *ex-officio* guardians in the election of the other half. The principle was also unconstitutional, because the national expenditure was entrusted wholly to the House of Commons, all the members of which were elected by the ratepayers. No one would for a moment entertain the idea of allowing one-half the members of the

House of Commons to be nominated by the Queen and the other half by the ratepayers, and yet while the ratepayers elected the whole of the members of the House of Commons, who were entrusted with the management and control of the national expenditure, amounting to seventy millions annually, they were not by the bill of Mr. Wyld thought worthy to be entrusted with the election of the members of the county financial boards, to control the county expenditure, which amounted for the kingdom to only about two millions. He thought that the principle on which the board was proposed to be constituted by the bill would produce a class feeling in the board, and on these grounds he moved as an amendment "that the election of justices by justices to form one-half of the county financial boards is contrary to the constitutional rule and practice adopted in the national and local institutions which administer the public finances."

Mr. ALLANSON, in seconding the motion, said that he was at a loss to conceive why the Chamber should have been called together at all to discuss this question, if they were only to send a resolution up like the one that had been proposed by Mr. Williams until Parliament had discussed the bill. By adopting the course recommended he thought it would appear that they approved rather than disapproved of the measure. He recommended that immediate action should be taken, that they should consider the provisions of the bill and express their opinions on them, otherwise they would in all probability find that they would be too late. He thought that one-half the members of the financial board should be composed of magistrates, but what he objected to was the proposed mode of their election. Let them be chosen by the ratepayers and then all opposition would be removed.

Mr. REGINALD ROGERS denied that the proposed mode of electing the financial board would tend to set class against class, and referred to the fact that in boards of guardians, which were composed of magistrates and the representatives of the ratepayers, the contrary had been the case, the two classes working together most harmoniously for the public benefit (Hear, hear). He defended the magistrates from the attacks that had been made upon them, urging that, for their management of the county finances, the ratepayers were much indebted to them, and reminding his hearers that in the expenditure of the public money they were not their own masters, it being forced upon them by Acts of Parliament. The increased county expenditure, he contended, was not owing to the extravagance of the magistrates, or to any want of watchfulness or economy on their part, but to our progress as a nation. He impressed upon them that the management of the county finances required a greater amount of skill and experience than many of them imagined, and questioned whether one in every fifty ratepayers would be found capable of discharging the duty. In his opinion, the magistrates, from their education and experience in the management of the county finances, would be found the most valuable members of the new financial boards when established; but he cautioned the meeting against running away with the idea that these boards would be able to reduce the county expenditure to a minimum.

The last sentence in the original resolution was struck out, and it was put and carried unanimously.

Mr. ROWS then proposed his amendment as a distinct resolution.

Mr. ALLANSON, in seconding the resolution, said that Mr. Rogers, in referring to the county expenditure, had stated what was not the fact, because there had been expenditure of the county money by the magistrates which was not forced upon them by Act of Parliament or by the requirements of

he county. He was surprised to hear that gentleman tell him that there was not one in fifty among the ratepayers competent to manage the county finances, and that he himself was one of that small number (laughter). He should be delighted, when the financial board was established, to meet Mr. Rogers there, and to learn something about finance from him (laughter).

Mr. Wm. ROWSE confessed that he could not understand upon what ground Mr. Rogers professed to be in favour of the appointment of financial boards, when he considered that the magistrates had managed the county finances in the best possible manner (Hear, hear).

Mr. J. PAUL reminded the Chamber that they had not met for the purpose of indulging in comments on the conduct of the magistrates.

The CHAIRMAN pointed out that the resolution of Mr. Lowe asserted what was not the fact, as, so far from the appointment of magistrates to boards entrusted with the management of county finances being contrary to constitutional rule and practice, the Legislature, in devising the constitution of boards of guardians and highway boards—two bodies en-

trusted with the management of the money of the ratepayers—had distinctly recognised the advisability of including the justices, by making them all ex-officio members of these boards. He should, however, put the resolution.

The resolution was then put, and rejected by a large majority, only five voting in its favour.

Mr. ROWE next moved, "That it is the opinion of this Chamber that county financial boards should consist in each county of one person to be elected by each board of guardians, and one person to be elected by each highway board in the county." He hoped to see many magistrates on the boards; but the election should be by the ratepayers.

The CHAIRMAN pointed out that most of the matters of county finance were connected with criminal justice, so that it was necessary in the administration of these finances, to secure efficiency as well as economy, that both magistrates and ratepayers should be represented. The magistrates themselves were in a far better position to know who among themselves were best calculated to deal with these matters than the ratepayers possibly could be.

After a short discussion, the resolution was put and rejected.

ESSEX CHAMBER OF AGRICULTURE.

A general meeting of the members was held on Friday, May 1, at Chelmsford, for discussing the establishment of County Financial Boards. The President, Mr. J. W. Perry-Vatlington, occupied the chair.

Mr. AMIS HEMPSON (Ramsey) introduced the subject of County Financial Board, and remarked that Mr. Wyld's Bill, which had been rejected by the House of Commons, was founded on the old principle which was affirmed by both parties in the House of Commons, that representation should be co-extensive with taxation. There was a time when a measure known to have been originated by Mr. Hume, or Mr. Milner Gibson, would have stood a poor chance of favourable reception by a large party of farmers; but prejudices had faded fast the last few years, and the only question was, "How is the measure likely to affect our own interests?" no matter in which side of the House its proposer happened to sit. The question for this Chamber to decide was whether they, as ratepayers, wished to have a voice in the county expenditure. In Essex the general annual expenditure for county charges was £16,000; for police, £19,000; lunatic asylum building, £6,000, and the maintenance of lunatics £17,000; altogether about £58,000. Of this sum rather more than £9,000 was received from Government, from boroughs and other sources, leaving £49,000 to be paid out of the poor-rates. The total value of the rateable property for the county-rate was £1,974,576, and therefore the sum he named would be just about sixpence in the pound. All the ratepayers knew of that £49,000 was that certain instalments were demanded from time to time of the Boards of Guardians, who had no choice but to pay them. In boroughs the functions of magistrates were simply judicial: all funds were managed by councils elected by the ratepayers, and he thought it should be the same in counties. He had raked up no old grievances to support his view of the case; on the contrary, he admitted that in Essex they had a body of magistrates who gave up much time to county matters, and he saw no reason why, if they had a financial board to assist them, they should not act as harmoniously as they had hitherto done amongst themselves. As to the question of saving, if he were asked what he expected to save by the adoption of this measure he should say, "Not much." Prisons, of course, must be kept up; but he admitted that the local and practical knowledge that would be brought together from all parts of the county would be more likely to ensure economy and efficiency than the present system. Lord Berners had recently said that he would rather pay the county charges out of his own pocket than give the ratepayers a voice in their expenditure. If his Lordship could only pass a bill transferring the burdens from the occupiers to the owners, no more would be heard of financial boards. Until that was done he thought that those who bore the burdens should have a voice in the management (applause). Mr. Hempson then moved the following resolution: "That

this Chamber is of opinion that the interests of occupiers generally require a more direct representation in the control of the county expenditure by the establishment of Financial Boards."

Mr. J. S. GARDINER (Borley) seconded the resolution.

Col. SHAKESPEAR said Mr. Hempson had spoken of the farmers as the ratepayers, and as paying the rates out of their own pockets; but it was a well-known axiom of political economy that charges on property were deductions from the owner, and it was therefore from the landlord that the rates came. It appeared to him that the effect of financial boards would be a greater division of authority than now existed, and nothing was so detrimental as that.

Sir BRIDGES HENNIKER, thanking Mr. Hempson for the manner in which he had brought forward the question, agreeing with the last speaker as to the farmers not constituting the body of ratepayers, and he called attention to the fact that some of the largest ratepayers in proportion to their means were the clergy. If financial boards were introduced they might fairly say they had a right also to be represented. So far as he himself was concerned, he was not opposed to the principle of financial boards if a good scheme could be brought forward; but there were many difficulties to be considered.

Mr. J. S. GARDINER argued that the farmers had a direct interest as ratepayers, because they were the men responsible for the payment, and not the landlords.

Colonel BRICE said the argument of the supporters of Financial Boards might be summed up in four points—that by them there would be a more economical expenditure; that the nomination of the magistrates was vested in the Crown instead of in those who were interested in the expenditure of the money; that representation and taxation should go together; that the ratepayers generally felt aggrieved, and that there ought to be no grievance without a remedy. The gallant Colonel alluded at some length to each of these points, and said that it would be fair that the cost of all public buildings should be borne, not by the occupier, but by the owner, and collected in the same form as income-tax under schedule D. The great argument was that of the grievance which the farmers felt, but he pointed out that the magistrates were always glad to co-operate with the farmers; and he offered to vote for the resolution if the proposer would leave out the words "by the establishment of county financial boards."

Mr. P. O. PAPILLON objected to the interests of the body of the ratepayers and the magistracy being made distinct: the magistrates desired to discharge the duties of their office, not only for their own interests but for the interests of the ratepayers at large. He pointed out one or two defects in Mr. Wyld's Bill, and he asked how it would be possible for a committee of forty-four—for that was the number the Financial Board for this county would consist of—to work together so that the public business could be carried out efficiently and

satisfactorily to the rate-payers? Was it possible, also, that in three years the members of the Financial Board could acquire that necessary experience in these matters which was essential to their properly carrying out the functions which devolved upon them? Then the distance they would have to travel to visit, for instance, the Lunatic Asylum at Brentwood, was also, he thought, a serious obstacle; and, again, he asked if it was likely with this divided authority they would get committees of the magistrates to take that active and painful interest in the lunatic asylum, gaols, &c., when they knew they had to justify their opinion to the ratepayers? Nevertheless, he thought some scheme might be devised by which two or three assessors could be elected in some way, who should be present at the Quarter Sessions when financial questions were discussed. As an abstract question he did not object to Financial Boards, but he doubted whether if they were carried out the ratepayers would feel any more than at present that the business of the county was more satisfactorily and economically carried out. Having warned the Chamber not to be led into lending itself to political agitation (he quoted a speech of Mr. Goldwin Smith's at Manchester to illustrate his meaning) he moved the following amendment with a view to secure the unanimous vote of the Chamber: "That whilst this Chamber

fully admits the soundness of the principle that taxation and representation should go together, it does not consider the establishment of County Financial Boards a pressing necessity, and is satisfied with the course recently taken by the House of Commons of referring the whole subject to the consideration of a Select Committee."

Mr. E. DISNEY seconded the amendment.

Mr. YOUNGMAN (Woodham Ferris) thought it would be better if the Justices of the Peace would act as Her Majesty's Judges did, and not dirty their hands with the county expenditure.

The PRESIDENT said after what had fallen from the last speaker he felt bound to rise and say that the magistrates did not regard the control of the expenditure of the public money as a dirty business when that was thrown upon them as a public duty (applause).

Mr. BRANWHITE spoke in favour of the original motion.

Mr. DUFFIELD (Baddow), a tenant-farmer, said he had never felt that the taxation of the county was oppressive, and did not think, therefore, that there was any pressing necessity for the change that was advocated.

The amendment was lost, and the original motion carried by a considerable majority.

THE PARIS EXHIBITION.

NOTES ON SOME OF ITS NOVELTIES.

The Paris Exhibition is now numbered with the things of the past. That vast and wondrous collection—not less wondrous because carped at—is dispersed all over the globe, and for good or evil it has done its work. Evil, however, we can scarcely suppose it wrought, although it may be questioned whether it did, or was in reality calculated to do, all the good its originator or originators expected from it. For the truth is that, independently of the fact that such large collections of objects—much of them very bazaar-like, if not bizarre—have really not the extremely useful influence that by some they are considered to have upon the progress of the arts and sciences. We have been doing of late years rather too much in the way of exhibitions, international and national; rather, indeed, we have over-done the thing. But this is ever the way of men; no sooner does a good thing turn up, than, in our vain endeavour to make it, in our notion, better, we over-do it. We start a hobby and then ride it to death. If this, as to the over-doing of the exhibition mania (and if a mania it has been over-done), be true, then the probability is that the world has seen the last of international exhibitions for a considerable period. It behoves us, therefore, to get all the good we can get out of the one that has just passed from us, and from the chaff of it to separate the wheat. In this way of work we did something, as the pages of our *Journal* last year testified largely; but as there was so much to do, we did not do all. We therefore now pick up from the mass of material we collected for the then exposition and explanation in our pages, but which for reasons just stated we could not overtake. In placing what selection of this material before our readers that its importance demands and our space admits of, we shall endeavour to draw such practical inferences and derive such useful lessons from it as may best come out of or be suggested by them. And at the outset one lesson, which from the collection as a whole, in its *agricultural aspect*—for that is the one which mainly or rather alone concerns these pages—may here be gone into, is, that however much other branches of engineering, or trades, or callings as practised in this country have to fear from the increased and increasing competition of foreigners, that of agricultural

engineering and mechanics has nothing to fear. We say this most unhesitatingly, and say it after a full and close examination of the whole of the exhibits gathered together in and around that "great gasometer," as well as in the region of Billancourt. But at the same time we are free to think that a like examination of the exhibits of some of the departments did seem to justify the forebodings of those who held, and still hold, that this country has much to fear from foreign competition; for it was evident enough that foreigners were closely following in the path we have long looked upon as exclusively belonging to us; and although it may be questioned whether they are so close on our heels as some seem to think they are, still clear enough it is that they are too close for comfort. That they "copy" our best models is also clear enough, and that they are trying their best to copy also the class and kind of workmanship which distinguish these models is also clear, but to our mind they have not quite so well succeeded as some think amongst us. So far, indeed, from that, that we have only to make a little effort, "a slight spurt," and we shall shoot so far ahead of them, that we shall leave them as hopelessly behind as they were, years ago, behind us. The only thing to be dreaded is, that we will not make this effort; that we will, on the contrary, supinely shrink from it, and rest satisfied with the belief that no one can approach us, far less succeed in passing us in the race. Such, we fear, is likely to be the case to a large extent; for we have only to consider that many of those most interested say, "Ah, well! we have nothing to fear from this competition, for these foreign fellows only copy us." These forget, however, that the foreign *purchaser*, who in times gone by was forced to come to our market for its machinery, does in no way concern himself with this. What cares he whether the machine which a foreign maker brings out is or is not a copy of English makers? Nay, rather, is not this the very thing to be feared—that it is a "copy." We think it is. The thing copied may, to our mind, be but a base imitation, and a poor one; but if it bears so much of the appearance of the good coin, so many of the marks of the true mintage about it, as to deceive the foreign *purchaser*, there the danger lies. We should in

all such cases look at the matter, not from our point of view, but from theirs. A true general does not bother himself with what are to be his tactics in the field: he tries to think what will be those of his opponent; and if he finds them, he knows he himself has genius enough to meet and match them. Just so in the case before us—one of infinite importance to us as a nation—the foreign purchaser does know that they are “copies” of good English machines; and just so much the more he thinks of them. The closer the copy, the better for him. And then, when he finds that the “copy” is *cheaper* than the model, see what a power the foreign competition brings with it! And that foreign copies, such as they are, are cheaper, an examination of the Paris Exhibition showed clearly enough. It is from this point of view, and this mainly, that the question which has been so much discussed of late, as to the danger arising from foreign competition, brings and carries with it so much of vast importance to us. It is easy to say that the copy is only good as far as appearance goes—that the workmanship is faulty; but that is the precise point, as a rule, which does not concern the purchaser much. Cheapness is with him a very urgent claim. And we in reality find it is so in our own markets; else how comes it that men who want machines and tools buy those made by inferior makers, while the good makers are passed by? nothing more nor less, in truth, than that the comparative or decided cheapness of the inferior maker *decides* the matter. This is found here every day; and herein consists the danger which lies in the foreign competition to which many of our engineers and machine-makers are now subjected. But the gist of all these considerations—not by any means unimportant to our readers—with reference to that class of machinery in which they are chiefly concerned, is, that the fear which troubles other buyers and merchants need not greatly, at present at least, trouble those connected with agriculture; for the foreign makers have, apparently, such a high notion of their own implements, that they have not, as a rule, begun even to “copy” ours. It would be a good thing for them—at least it would be a good thing for their customers if they did begin to copy our implements and machines, if not in actual design, at least in workmanship. For just in proportion to the success of their copying would be the advantages reaped by the users of the machines or implements copied. Those who know what foreign machines and implements are, know what a broad line separates them from similar machines and implements used with us. We do not here refer so much to the workmanship—which generally is so atrociously bad as to leave even the worst-made examples met with in this country quite clear of the chance of any competition—but to the design. As a rule, we venture to say that there is in none, at least in very few, of the foreign implements and machines, that close adaptation of their parts to the work which they have to do, which we find in our examples. From the mere distribution of the parts we could tell, in nine cases out of ten, whether a machine put before us was or was not foreign in design. And as to workmanship, the less said of that of foreign machines the better. As we have just said, the very worst work done in this country is so good in comparison that the worst maker here might with all safety compete with the makers there, and fear not the result. And while on this point of workmanship, we may here state that it is not merely in the class or quality of the work that the deficiencies of foreign agricultural machinists are so observable, but in the absence which it indicates of the use of all those mechanical appliances and modes of working which we have brought to bear in our workshops and factories. We have scarcely ever seen a machine of foreign make, which necessitated some degree of mechanical knowledge in its design and ope-

rative skill in its make, but what seemed to us as if the design was carried out in utter ignorance of the best and most recent mechanical appliances, and the workman who made it as if he was an apprentice trying to do good work, but failing in the attempt. Let those of our readers who have a knowledge of what foreign agricultural machinery is, say whether this criticism of ours be true or not; for ourselves we have no fear of the verdict. We could easily, did space admit, bring numerous cases in point, taken from the foreign and the British departments of the Exhibition. And it opens up to us some very curious considerations, this view of the matter; for it is beyond dispute true that some foreign machinists—markedly those of France and Belgium—do bring out many good things in the way of machines; and that they can at all events *copy* with wonderful accuracy of results, we had abundant evidence in the Exhibition of 1867. And the question, therefore, naturally arises, Why do they not “copy” our agricultural machines and implements more than they do; not only so far as workmanship, but as far as design, is concerned? The question has not seldom been asked, but no reply satisfactory to us has ever been given. Is it that they are so wedded to their misconceptions of what agricultural machines and implements should be, that they will admit no one to excel themselves, or at all to be capable of approaching their position? or is it that there is some cause why they should, in design at least, differ from the same class of implements and machines with us? We take this, rather in a certain modified sense, to be the truer reason. Certainly it is the more complimentary, if not the more just, to our foreign competitors; for although prejudice has a wonderful force and persistency, still it scarcely clings long to a man when he finds that its clinging to him hinders his progress. If prejudice, then, exists to bring about this state of matters, as above indicated, we believe that it exists amongst the foreign purchasers—not amongst the makers. And that this prejudice does so exist we have no manner of doubt; nor will those of our readers who know what manner of men the farmers and peasants of continental countries—markedly of France—are. We know the standing; and, as we may call it here, the silly joke there is current amongst men in our country who are not concerned in agricultural pursuits, as to those who are, being the veritable slow-coaches of the nineteenth century. This charge of slowness or prejudice is to a large—a very large—extent untrue of our farmers; it is to a large—a very large—extent thoroughly and unmistakably true of a large proportion of the continental farmers—markedly of the peasant farmers. This, then, probably is the cause why agricultural machinists of the continent do not follow the example of their brethren in other branches, and “copy” our machines and implements as closely, and in as large a number of cases; for if they did, they perhaps know too well that so prejudiced are the purchasers in favour of their own peculiar implements and machines that they will not buy the “copies.” So that the truth may be that in agriculture it is not as in other branches of mechanism—purchasers do not think highly of English models; and thus, if ever they change in this respect, the makers of agricultural machines will do as do makers of other machines, namely, copy the models—with what results, so far as workmanship at least is concerned, let those say who know what kind of workmen are employed in continental agricultural machine shops, and how far these shops are or are not supplied with all those mechanical helps and appliances with which ours abound.

At the same time, the other consideration which we have already alluded to must not be overlooked, namely, that there may be something in the circumstances of farm practice which prevents our models being copied by agri-

cultural machinists on the continent, so far as their design is concerned. We believe that, so far as implements for field-practice are concerned, this consideration carries with it some amount of practical weight; for peculiarities of soil and locality operate on the continent precisely in the direction they do with us, and bring about a diversity in the character of the implements, just because there is a marked diversity in the character or kind of work which they have to perform. In such cases it is always dangerous—at least unsafe—to predicate what an implement ought to be in point of design, or what ought to be the kind of work which it ought to perform in point of quality, from our own peculiar stand-point; for it may not be—and very likely is not—the stand-point from which the implements in question are designed. Considerations such as these do affect, to a very marked extent, the design of many of the implements of field-work which are met with abroad, and which from their peculiarities puzzle many amongst us, and set them wondering why such things should be. But these considerations do not, so far as principle is concerned, come into play, when we consider what, for lack of a better title, we may call the machines of definite duty, such as those engaged in the work of preparing produce for the market, or food for the stock of the farm. Here in our own country, as in theirs, the material to be operated upon, and the work to be done, are almost identical; and the wonder is that our machines are not copied more extensively than they are by continental makers. We say we wonder; for, beyond all doubt, an examination of the same class of machines in the British and Foreign Departments of the Paris Exhibition of 1867 showed that ours are in every respect far before those of foreign makers. That foreign makers do now and then copy us is doubtless true; but that they do not do so, as a rule, is beyond a doubt. In proof of this, let the reader who examined closely the exhibits of the British and Foreign Departments bring to recollection what were the characteristics of, for example, the thrashing machines, and almost the whole range of machines for preparing food for stock, met with in the Foreign Departments, as compared with the like machines in the British.

This lesson then we derive—amongst others hereinafter to be detailed—from the Paris Exhibition, that, however much other branches of engineering have already suffered, and seem likely still further to suffer, from the competition of foreign makers, that of agricultural engineering has nothing to fear. Alike in point of design, of admirable adaptability to the character of the work they have to perform, and in point of workmanship—which nothing in the Exhibition of foreign make which we came across ever approached to that of our makers—our machines and implements bore away, and are likely, in our mind for a long time in the future, to bear away the palm before all competitors.

Not the least suggestive of the lessons which may be derived from the great gathering of last year—whether the answer may be “yes” or whether it be “no,” to the questions put by those interested in certain departments of farming, did any good come out of it? we shall see as we proceed—was that connected with the display of plans and models of farm-buildings. From the prominence given, in the programme of the commissioners of the Exhibition, to agriculture and its cognate branches, a reasonable expectation was it that these plans and models would be, if not very numerous, at least numerous enough to illustrate what, in this important department of farming, was the practice of the various countries of the world. This expectation was far from being realised—so far, indeed, that the collection of plans and models of farm-buildings was exceedingly meagre; and being, such as they were, confined almost exclusively to the buildings of

France and Belgium, no *cosmopolitan* view of the whole subject was at all attainable. Another, and probably a still more reasonable expectation in the minds of many, was that, whatever would be the country which sent such a meagre collection of plans and models, this country would take a step in precisely the reverse direction, and would send, what indeed no country could send like her, a collection which would give the visitors to the Exhibition some fair notion of what, in this department, British farmers have done; for it is merely a truism to say that, for the number as well as for the excellence in point of arrangement and construction of the farm-buildings, no country can excel our own, or indeed, for the matter of that, at all approach her. And yet it is neither a pleasant nor a creditable thing for us to have to say, in our capacity of reporter for such a journal as this is, that England was not represented at all, unless one plan, or at the most two plans—so far as we searched, we could discover no more—could be called a representation. We say, at the most two plans; for of these one was exhibited by a German, so that, literally, our own department was represented by one plan. It is quite probable, however, that, close as our search was, we overlooked some; nor need this be wondered at, when one recollects the nature of the classification, or rather of the mode in which the classification—in itself very good—was broken through, giving as the result a confusion of detail bewildering in the extreme, in which one department was mixed up with another, and what was appropriate to one department, and should have been exhibited in it, was sent off to another in which it should not have been exhibited. Notwithstanding, then, the perfection of classification decided on, confusion in many of the departments reigned supreme, because classification was ruthlessly, and in many cases we hesitate not to say wantonly, set aside. And here the question is not a useless one to ask, nor is the lesson to be derived from its answer less so. How came it that a department in which England could have displayed such riches, yielded poverty which was removed but one step from absolute want? Did the influence of that department which dwells in the classic regions of the “Brompton Boilers,” and which is said to concern itself with Science and Art, forget that there was such a science as that of agriculture, not less important surely, but more so, infinitely more so, than some with which that department concerned itself? We may ask the question; but when shall come the reply? Echo answers, and only answers, When? We have no hesitation in saying that if the important department of practical farming with which the present paper concerns itself had been placed under the care of one only of a band of men whom we could here easily name, well acquainted with the subject, the result would have been a display of plans and models of the farm buildings of England which would have well and worthily represented what the farmers have done in this department. But like many another opportunity, this good one was lost, and all that remains to us for consolation is, that we could, had we liked, been far a-head of other countries in this as we have shown ourselves to be in other departments of practical science; and, further, this lesson remains, that in future exhibitions—if ever we see another—as grand and gigantic as the last, we shall do as little good, if we leave our work to be done by those who either cannot do it, or if they can—which we take leave to doubt—act as if they believed that that work was altogether beneath the notice of departmental dignity. We dismiss then, here, this by no means unimportant question, and leave such lesson as it brings with it to work its own work, and proceed therefore to discuss other and more practical lessons, and to describe other novelties, if indeed the strange and unfortunate doings of the “department”

we have above alluded to can be said to be a novelty with us.

We have already noticed the fact that the "exhibitors" in the department of farm buildings in the form of plans and models were chiefly confined to the French and Belgian departments, although exhibits were met with, in the German and Italian departments as well. And it is but only justice to say that in these the plans and models were not only fairly numerous, but good and suggestive in practical quality. The French exhibitors, it is scarcely

necessary to say, were the most numerous, and had in one or other of their special annexes, and in the main building, some very elaborate plans and carefully constructed models; the former being chiefly met with in the machinery gallery; the latter in the annexes, such as those of the *Département du Nord*, and in that occupied by the exhibits of the Imperial Agricultural School of Grignon. From these annexes we filled our note and sketch-book with a good many things, of which we purpose to give a fair selection in this and other papers.

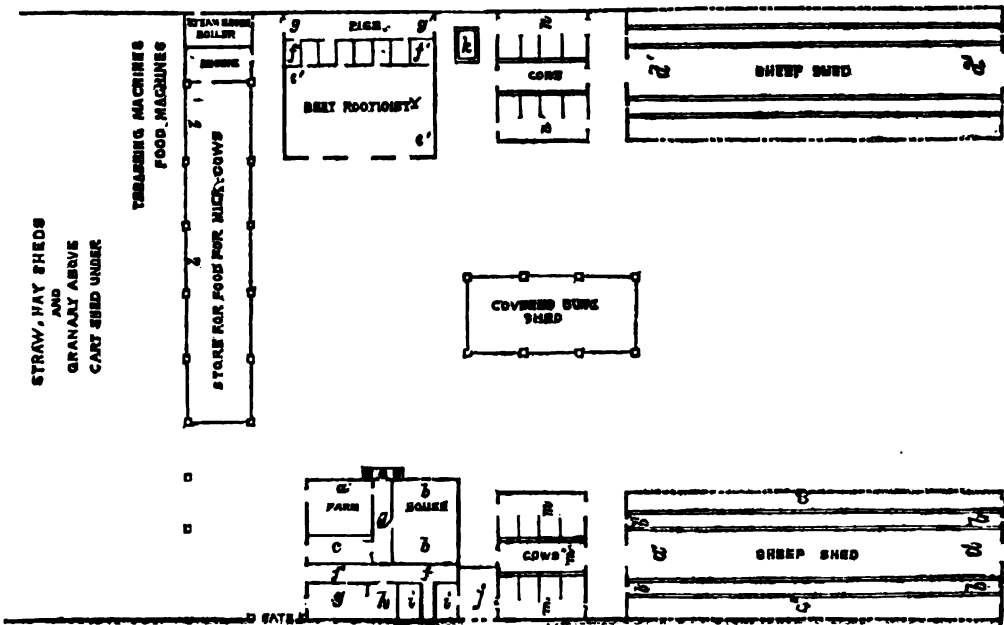


Fig. 1.

Two sets of plans of farmeries were exhibited in the annexe of the agricultural school at Grignon, with numerous detail drawings, and several models and photographs. Of these plans we here in fig. 1 give a rough sketch. For the full explanation of the arrangement of this, it will be necessary to add here the descriptive matter engraved on the plan. Thus in the bailiff's house, next the gate, the following apartments are indicated thus—*a* the bailiff's office; *b* the kitchen and living room; *c* the small dining-room; *d* passage or lobby containing the stairs for access to the bed-room story; *e* the outside steps, thus raising the floor of ground storey considerably above the level of the soil, a most important point in building economy, and one too often overlooked as being one of the very best preventives of damp at the disposal of the builder; *f* back passage, *g* the bakery, *h* the store-room, *i* the poultry-house, *j* the court yard or ditto. Odd as this conjunction of poultry with the living-house may seem to us to be, it nevertheless is a good one so far as the fowls themselves are concerned, or all who know anything of these "small fry" know they love warmth; although it must be confessed that the fowls in the arrangement shown in the plan have by far the best, of it. We can scarcely say that we envy the bailiff's condition of house, especially in hot weather,

when the gales wafted from the poultry-house will not be of the most odoriferous character. But, then, some men are such keen farmers that they sniff up a "strong stink" from a muck-midden as if it was as sweet as the balmy breezes of Araby the blest; and so the perfume of poultry may come, in like manner, grateful as the first breath of flowers in spring.

The dimensions of the apartments devoted to stock are as follows (we give them in metres and centimetres, a metre being, in English, 89.371 inches; and this is divided into one hundred equal parts, each of which is called a centimetre): The extreme length of the cow-house run is 7 met. 50 cent. The breadth of the dunging passages from head of manger to the wall is 4 met.; the full width of house 10 met. 66 cent.; the feeding passage *m* between the two rows of mangers, being over two metres in width. Ample space is thus given to feed and dangle the animals, and thus render all work as easy as possible. As a rule, it may be said that the working space in farming buildings is too confined; a very little extra width would not cost much in labour and material, and would be well worth the extra cost involved. In fig. 2 we give a section of the cow-house as in fig. 1.

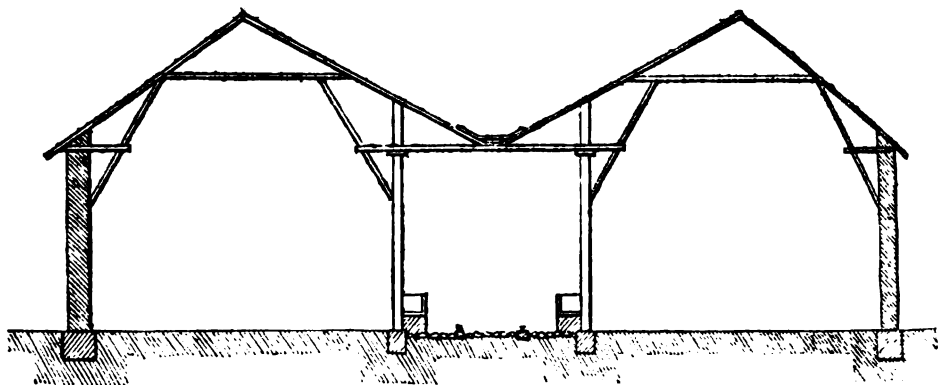


Fig. 2.

The extreme length of the sheep-shed (see fig. 1) is 29 met. 20 cent.; the full width, 10 met. 66 cent.; the width of sheep-feeding space *a a* being 5 met. 33 cent., the spaces *b b* being fitted up on each side with feeding racks and boxes, indicated by the double lines; and the centre space between the boxes being fitted with rails, upon which the trucks are run which convey the food. Sheep may also be fed in the side spaces *c c*. In figs. 3 and 4

of which is shown in fig. 1, the extreme length of this being 14 met. 90 cent. and breadth 6 met.

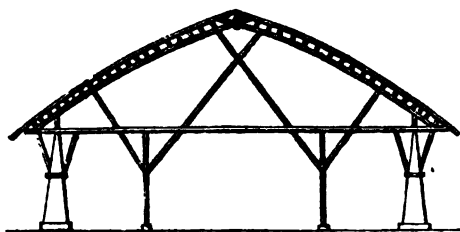


Fig. 3.

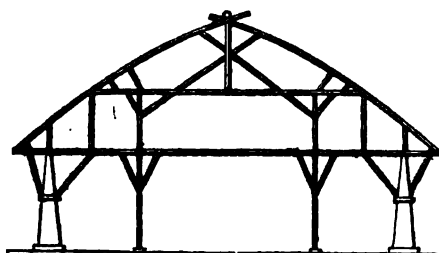


Fig. 4.

we give two sections of sheep-sheds, about which we shall presently have more to say. The sheep-shed *d d* in the opposite side of the farmery (see fig. 1) is precisely the same in arrangement and dimensions as that at *a a*. The same remark applies to the cow-house *n n*, opposite to *m m*. In the plan fig. 1, *k* shows the water reservoir, which is 2 met. 60 cent. long by 1 met. 90 cent. broad. The beetroot distillery *e e* is 7 met. 20 cent. broad, and is fitted up with all the necessary apparatus. Behind the distillery is a range of pig-boxes *f f*, each of which is, on the average, 1 met. 70 cent. broad and 2 met. long. The feeding and dunging passage *g g* is provided with a set of rails to facilitate the supply of food and the removal of the dung. In fig. 5 we give section of the granary, and in fig. 6, section of the covered dung-shed, the plan

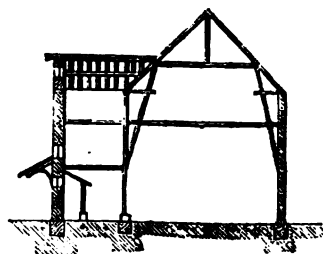


Fig. 5.

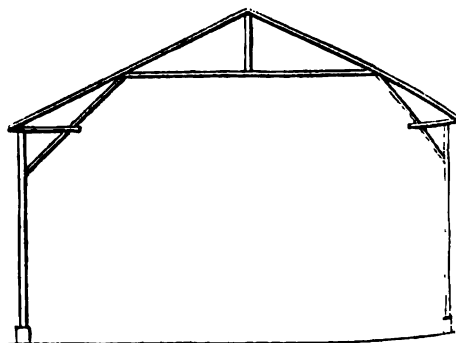


Fig. 6.

In examining this and other of the plans of continental farm buildings exhibited, a few of the best of which we purpose in a future paper to illustrate, there are two or three features which are very marked—all the more so that they are almost exclusively met with in continental, rarely in English, farm practice. These are "covered dung-courts or sheds," "covered sheep-sheds," and "beetroot distilleries, or sugar-making houses." Let us see what "lessons" these features convey to us; and this will repay such trouble as we may be at in placing them before our readers; for the considerations involved in their discussion are really of the highest practical importance.

And, first as to *Covered Dung-sheds*. There is perhaps no subject within the range of scientific and practical farming which has been so much discussed as that of farm-yard dung or manure, its nature and constituents

and the best mode of managing it, so as to gain the utmost advantage from its use. Nor need we wonder at this, when we consider that there is no substance, or no artificial mixture of natural substances at the command of the farmer, which presents to him such a means of influencing, both in a mechanical and chemical way, the fertilization of the soil, and adding largely to the value of the products which he draws from it as farm-yard dung presents. Everything then, which tends to increase, not only the available amount of this valuable agent, but to retain its valuable qualities as a manure-resource of the farm, brings with it considerations of the highest possible practical importance. That the method generally, we were about to say universally, employed to manage the farm-yard manure is not the method best calculated to retain its valuable qualities, nearly all authorities cordially agree in admitting. The proportion which the fertilizing ingredients of farm-yard dung—that is, those which act chemically—bears to the mass (that is, the part which acts mechanically in the soil), is very small indeed. All the more reason therefore that practice should be such as to enable those fertilizing ingredients to be saved, to be yielded to the soil which they are designed to enrich, rather than that they should be dissipated in the air, or washed out by the rain into the soil upon which and near which they rest, which is *not* the soil which is required to be enriched. Hence the absurdity of the method too often employed of placing our farm-yard manure in positions where it is freely exposed to the atmospheric influence, and in which the drainage is to the surrounding soil, or to some open ditch in the immediate neighbourhood. Advanced agriculturists have seen, then, the absurdity and the loss, the heavy loss, which is sustained by practising it, and have therefore endeavoured to substitute for it a mode of management which would have the opposite effect, namely, retaining in the dung as much of the fertilizing ingredients which good arrangements could secure, that is to minimize the loss. Probably more attention has been bestowed upon the subject, and more attempts made to realise a good and safe practice, on the continent than in this country. Certain it is, that more has been written upon the advantages of a good system there than here, and late years have witnessed a much larger proportion of covered dung courts or pits erected on the farms of the continent than on the farms of this country. And it is well to derive what lessons there may be from this fact. We say *covered* dung courts, for it is altogether in this direction that advanced practice has displayed itself. Foremost among the scientific agronomes of the continent who have given great attention to the subject, written much upon it, and amongst the first who carried out in practice what they advocated in theory, is Baron Peers, of Oostcamp, near Bruges, in Belgium, where farm-buildings were illustrated in the Belgian Department of the Paris Exhibition, of which buildings his covered dung-pit forms a part, and which we some years ago personally inspected. This we shall illustrate in our next, in plain elevations and sections. Meanwhile we may here note that this eminent authority holds it to be incontestable that the frequency—nay, the continuity with which farm-yard dung is subjected to the atmospheric influences, when placed in the ordinary open and exposed court-yards, exercises a most deleterious influence upon the value of the manure. The alternating dryness and wetness to which it is there exposed brings about a thorough disorganization of its constituents, such as the nitrogen, carbonic acid gas, and ammonia, which go to make up its integral unity, and to break up or destroy the equilibrium which keep them together. Much of the fertilizing value of dung consists in its salts, which are soluble, and which solubility when the dung is exposed to rain brings about a

further loss in the evolution of valuable gases. Payeu, a great continental authority, points out that farm-yard dung loses a great part of its value by being exposed to the action of rain, and, as he says, above all to the heat of the sun's rays. Now, this is precisely the position in which we place farm-yard dung when we keep it exposed in open court-yards. And turning in conclusion, to our own authorities, we find one of them—the most advanced in practice—gives it as his decided opinion that dung kept in a covered court is at least one-third stronger than that obtained from the open usually adopted courtyard: that is, every three carts of covered-court dung are worth four carts of open. Surely this is a saving worth trying to realize. But, further, this same English authority points out that a large saving is to be effected from the improved economy of management brought about by the use of covered-court dung. Such is its richness, and such its freedom from weak outside, that the necessity for carting it into heaps, and working there till the dung is uniform in character, is obviated. In the covered dung-court it lies ready for use: it need not be taken out till wanted in the field; it is safe under its shelter. "All the expense therefore," he concludes, "of carting to the heap, unloading at the heap, and turning in the heap, is saved." Such, then, is one of the lessons which may be derived from an examination of the continental farm building plans and models which were in the Paris Exhibition of 1867, in all, or nearly all, of which a covered dung court or pit formed an essential and important part, the lesson being that there must be something of value in this plan of treating farmyard dung when it is so largely acted upon, and that it is worth inquiry to find out what that something is, and whether it be really valuable or no. In a brief way we have enabled the reader to ascertain this; but when we, in our next, illustrate the covered dung-pit, to which we have already alluded, we may have one or two points of importance to give, still further bearing upon it.

THE HIGHLAND AND AGRICULTURAL SOCIETY.

The monthly meeting of the Directors of this Society was held in their chambers, No. 3, George IV. Bridge, Edinburgh: Mr. Goodlet, Bolsham, in the chair.

The summer half-yearly general meeting, for the election of members and other business, was fixed for Wednesday, the 24th of June.

On the recommendation of the Chemistry Committee, of which Dr. Anderson is convener, it was resolved to repeat the experiments on the small-scale system in four districts, with two experimenters in each. In regard to the experiments on the large scale, it was agreed that they should be conducted by eight experimenters in different districts, and extend over a four-course rotation.

It was reported that the examination of the students at the Edinburgh Veterinary College had taken place on the 15th and 16th April, when the Society's diploma had been conferred on twenty-nine candidates, and six silver medals awarded to those who passed the best examination in anatomy, chemistry, horse pathology, materia medica, physiology, and best general examination.

A letter was read from Professor Wilson, announcing that the prizes of £6 and £4 annually allowed by the Society to the students in the agricultural class in the Edinburgh University who pass the best and second-best examinations had this year been awarded to, first, G. R. Glendinning, Mid-Lothian; second, G. G. Bursby, Northumberland; and that the prizes had as formerly been given in books.

ABERDEEN SHOW.—On the motion of the Chairman, the Directors resolved to take the erection of the showyard into their own hands, and to entrust the superintendence to Messrs. John Watherston & Sons, Edinburgh, the Society's Master of Works—the lowest estimate received having exceeded by £244 the cost of the Glasgow showyard, where the erections were much more extensive.

THE MAY MEETINGS.

After having been engaged for weeks in hearing evidence for and against, pointed by learned harangues, replies, and rejoinders, the committees on the Foreign Cattle Market Bill have been engaged in fighting one with the other over the clauses of the preamble. And there can be no possible mistake as to the *OUT* *versus* the *IN* aspect which the inquiry has come more and more to assume. Liberal members who had long since given their countenance to certain sites have already turned about, and declared that they do not think any such separation of the trade would be politic; while Mr. Milner Gibson may, in this case, be as certainly regarded as a leader of the Opposition as is Mr. Gladstone himself. Under these circumstances some further proof will be afforded of how much power the agricultural interest really possesses. And there is a somewhat nice distinction to be observed here; for, as Mr. Jasper More very pertinently put it at the Farmers' Club on the Monday evening, "all who represented county interests were well aware that the landed interest and the agricultural interest were two different things. It was all very well to say at agricultural dinners that the interests of landlords and tenants were identical; but he did not believe it for a moment." However, the two are supposed to go together over the business of the Cattle-plague, if they be not otherwise often so united in their course of action. Indeed, the force of what Mr. More said was amusingly illustrated in the same room on the succeeding day, during a discussion over which he himself presided; when at the monthly meeting of the Chamber of Agriculture a resolution was put by one farmer and seconded by another, trusting that the Government was in earnest over the establishment of County Financial Boards, and that effective legislation thereon would speedily ensue. So far for the agricultural interest, and how answered the landed interest? Lord Lichfield for one "was not prepared to admit that by giving control to the ratepayers very much would be saved. On this point he held a strong opinion, and was inclined to think that on the whole the probabilities were that the expenditure would be rather increased than diminished." Lord Kesteven felt confident that, "whatever was done, affairs would not be managed more cheaply than they were now, though he was quite willing to accede to the proposal that the boards should to a certain extent be elective." Sir George Jenkinson believed that "it would be found that practically the control of the magistrates over the finances of a county was very little; that they were in fact merely an executive body to carry out certain Acts of Parliament; that they had not the power to increase expenditure," and so forth; while even Mr. Sewell Read seemed to be leaning away from the agricultural to the landed interest: "If the principle were adopted he did not think any great saving would be effected. One gentleman had referred to municipal corporations, and left it to be inferred that town councils elected by the ratepaying inhabitants managed affairs better than the magistrates in the county. He (Mr. Read) totally disagreed with that, and believed that the expenditure of the county magistrates would, in nine cases out of ten, contrast favourably with the expenditure in cities and boroughs." For perhaps the first time since he has sat in the House of Commons Mr. Read's opinions were met by expressions of dissent from his brother-farmers, as "No! no!" echoed round the room. If nothing can be

saved; if the county business cannot be conducted more economically; if the magistrates have really so little power, and if in towns, where the ratepayers have a voice, they do not manage matters so well as they do in the country, what can possibly be the use of making so much cry over so very little wool? But we are by no means inclined to agree with the noble Lords in their very complacent assumption that no saving can be effected, and we totally disagree with Mr. Sewell Read as to his nine cases out of ten where the expenditure of counties is better controlled than that of boroughs. It would be very edifying to have the honourable gentleman's statistics to this effect. But of course he was corrected forthwith; and amongst others by Mr. James Howard, whose authority is especially practical, as he has experience of both systems, being a town councillor and also a county magistrate. As he said, "people in the boroughs were directly interested, whilst frequently in the counties the magistrates were not. In fact, it was not an uncommon thing for a man to act as a magistrate who had not a foot of land in the county." Here, above all others, as we have shown again and again, is the weak place, as it does not stand to reason that a man without a shilling of personal interest in the expenditure, and most probably utterly ignorant of business, will be either very careful or efficient in his expenditure of other people's property. Then during the Club debate on the previous evening—for the two questions very naturally got mixed up together—Mr. Rees, a farmer from Hampshire, said "since the time of Elizabeth there had been the county and police rates put upon them, and new gaols and asylums had been built, things never contemplated in the time of Queen Elizabeth. And why should they protect the gentlemen around them? We should always find a policeman near a gentleman's gate. That gentleman contributed to the rates for his estate and the few acres he cultivated: he let the chief part of his estates to his tenants, and they paid for this policeman." Possibly, as representing the opinions of the farmers of Norfolk, Mr. Sewell Read may say that it is quite right and proper that the tenants should pay for that inevitable policeman at the landlord's gate; but it is quite clear that they think very differently in Hampshire. Again, at the Club meeting, Mr. Crosskill spoke "to the estimate formed by Sir George Jenkinson of the county magistrates. There was a strong clause in his paper as to the wisdom and industry of the local magistracy (laughter). Not being one of them he might be able to speak with some impartiality, and he must say he sincerely hoped they deserved the high commendations passed upon them; but it was a great, and no doubt unfortunate fact, that, as a rule, they did not receive those commendations, and were not so generally appreciated as they assuredly ought to be, according to the estimate formed of their capabilities (laughter)." Lord Lytton, speaking through his great hero *Pelham*, says, "I have remarked that baronets hang together like bees or Scotchmen; and if I go to a baronet's house, and meet with some one whom I have not the happiness to know, I always say *Sir John*." For baronets we should here prefer to read county magistrates, who most assuredly do hang together, as witness only the high characters they have been giving each other during the past week. "Nothing can be better than the present—that is, than

our system of management. You will never be able to improve upon it. We are able, economical, industrious," and so on. Able and industrious for one Sir George Jenkinson has indisputably proved himself, as his very elaborate paper will show. This may be well left to speak for itself, and from the tables of figures necessarily introduced, it will read much better than it could be followed in delivery. The remedy, however, goes almost in direct contradiction to the principle of careful local administration advocated, while we regard the proposal for putting everything on the income-tax as utterly impractical. As it is, there is no other burden that is felt so oppressively or carried so uneasily by all classes in the State. It had even to be introduced as merely a "temporary" evil, and in another Reformed Parliament he would be a bold man indeed who would propose so sensitive an increase as is here contemplated. Still, the Chamber of Agriculture supported the idea by a resolution on Tuesday; but, as Sir George Jenkinson regrets, they do not pass "formal resolutions" at the Club, and from all we saw of the tone of the meeting on Monday, had it continued to sit till now, it is doubtful whether anything could have been agreed to. The very motion of a vote of thanks was met by an amendment, in order to allow a member to disagree with the reply, although the business of the occasion was eventually brought to a conclusion. At the Chamber

of Agriculture it was not so, and sundry matters stand over for consideration at Leicester. In fact, according to *The Suffolk Chronicle*, a journal which appears to have sent up its own reporter, "there was, as is unhappily usually the case at these meetings, an immense amount of *talk*. Frequently at the close of one speech, three or four gentlemen started to their feet, each eager to catch the eye of the chairman. Everybody seems to come to these meetings with speeches he is most anxious to deliver, so that even when there is no difference of opinion, there is *talk, talk, talk*, enough to weary the most long enduring patience. It is an evil which must be remedied, for the power of action in the council is paralysed with *talk*, progress with business is wearily difficult and slow. We hope a little more experience will find some remedy for what is now become an intolerable evil." We hope so too, or we shall have to very vigorously curtail our reports. It must be understood that both Societies—the Club and the Chamber—are alike open to the charge. The same people, some of them without a particle of weight or authority, get up at meeting after meeting, until they are fairly cried down again by ironical cheers, impatient stamping, and the too significant echo of *bock!* A man that can speak on every subject is an intolerable nuisance, at least so say the martyrs of the House of Commons.

THE CENTRAL FARMERS' CLUB.

THE RATING OF FUNDED PROPERTY FOR THE MAINTENANCE OF THE POOR.

The last monthly meeting of the Club for discussion during the present season was held on Monday evening, May 4, at the Club House, Salisbury Square. The subject, the introducer of which was Sir George Jenkinson, Bart., was "The justice of rated and other property now exempt contributing to the maintenance of the poor." The chair was taken by Mr. E. Little.

After a few introductory remarks from the Chairman, who explained that the reason why he took the chair that evening in place of Mr. Clare Sewell Read, chairman for the year, was that that gentleman was detained in the House of Commons,

Sir GEORGE JENKINSON said: Gentlemen, in December last, your Secretary asked me to suggest a subject for discussion during the present season, and it at once occurred to me that the one to which I am now about to call your attention was one well deserving the serious consideration of this Club, representing, as it does, such a large amount of agricultural interest. I accordingly suggested the subject now before you, and your Committee having adopted it, your Secretary did me the honour to ask me to introduce it for discussion this evening. I begged that he would select some gentleman more able than myself to do justice to this important question, affecting, as it does, so vitally the class I am now addressing. I will only add that I yielded to your Secretary's repeated request to undertake to bring this subject before the Club this evening; and I hope that any shortcomings of mine in the performance of this duty will be treated with indulgence by this intelligent company, and that they will take the will for the deed, so far as I may fail to do justice to the merits of this question. Since I gave the notice of this subject for discussion—now four months ago—it has attracted the notice of several Farmers' Clubs and Chambers of Agriculture, and many resolutions have been passed upon it, some of which I all read to you. In fact, the attention which this subject is now attracting seems to be as general as that which followed

the notice which I drew some two years ago to the question of the abolition of turnpike trusts; thus showing very conclusively that the agricultural interest must unite and combine to protect themselves from the injustice of many things which they have hitherto borne silently, and amongst which I consider that no hardship presses with greater injustice than the present system of levying county rates for the maintenance of the poor and other charges, which are imposed only upon the owners and occupiers of land, although I assert that by all the rules of justice and common sense, all other descriptions of property ought to be equally liable to bear their proper share of such burdens. So much has been written and spoken, and such a mass of figures have been adduced since my printed notice of it appeared in December last, that it will not be easy to say much that has not already been said, and this especially applies to the figures which have been quoted from various returns. A very able paper was read by Mr. Arthur Startin before the Midland Farmers' Club at Birmingham, and I may perhaps avail myself of some extracts from that Paper; but as that, and many other documents of the same nature, have appeared in print very lately, I shall deal less with figures and quotations than I should have done some months ago, which, by shortening my Paper, will give the company present more time to discuss this subject in all the bearings which have been presented to their view by the various persons who have so lately enlarged upon it. I shall proceed now to divide the subject into heads, as each point appears to me to merit prominence. 1st, What was the origin of a poor-law, and what was the apparent object of such when first made? 2nd, What amount of property is there in England and Wales available for direct taxation, as shown by the income-tax returns? and of that amount how much contributes to local taxation, such as poor-rates and other county rates? 3rd, As to the justice or otherwise of the existing system? 4th, As to the remedy? 5th (And this I

consider to be the keystone of the whole question), contrast the position of an occupier of a farm, under the existing system, with what it would be under such a change as I advocate, and see how his position would be affected pecuniarily by such change.

Now as to head No. 1. The first distinct and positive enactment to enforce the collection of a poor-rate appears to have been passed in the 43rd year of Queen Elizabeth, and it was then enacted "that all persons should pay according to their abilities to the wants and necessities of the poor." Now there is no limitation here of such payment being confined to real property, to the exclusion of funded and other property. No doubt a great change has come over all property since that salutary law was passed, and a vast amount of funded and other property, as I shall show presently, has grown up and exists now, which did not exist then. Society itself has also changed vastly, and thus this anomalous state of things has gradually crept in, which results in the injustice which I am bringing to your notice this evening.

And this brings me to the second head of my subject. I have a mass of figures and returns all bearing upon this point; but I think I should only weary you by producing even the half of them, and therefore I shall content myself with simply enumerating the different kinds of property which do not contribute to the maintenance of the poor and other rates, and the only figures I propose to trouble you with will be the amount of property assessed to the Income Tax, and the amount assessed to Poor's Rate; I shall also refer to the amount of income beneath the charge to Income Tax, and which is stated by Mr. A. Startin, in his valuable Paper, to amount to no less than £318,000,000 in England and Wales: and if that be added to the sum which is charged to the Income Tax (and to which I shall refer more particularly hereafter), it will be seen by a return I shall also quote later, that only about one-sixth of the income of the country is now assessed to the Poor Rate. Surely no one can justify such a remarkable anomaly, and in connection with this fact it must be noted that the burdens on land have enormously increased since the Poor Law was imposed upon that class of property—and those burdens are increasing and likely still more to increase—reckoning the maintenance of turnpike roads, which now falls upon parishes by the extinction of the trusts gradually taking place; and at the same time it must be borne in mind that the land itself on which all these burdens are imposed cannot increase or fluctuate in the same manner that other property does. Now as to figures. I quote an official return, which was moved for and obtained by Sir M. Beach. It was ordered by the House of Commons to be printed 14th Feb., 1868. It bears the signature of the Chancellor of the Exchequer, and I cannot do better than read it to you in extenso, as the conviction it brings to my mind is most conclusive, as it must also I think be to all who hear it.

Return to an Address of the Honourable The House of Commons, dated 3rd August, 1866; for,

"Returns of the annual value of property in England and Wales charged under the different schedules of the property and income tax, made up to the end of the financial year in April of each of the years 1863, 1864, 1865:

Of the rateable value of property in England and Wales subject to local taxation, divided under the following heads: 1. In the metropolis (including the city); 2. In the counties; 3. In the cities and municipal boroughs; with the total of the whole, for each of the years 1863, 1864, 1865:

Of the amount raised by local taxation in England and Wales, in each of the years 1863, 1864, 1865: 1. In the

metropolis (including the city); 2. In the counties; 3. In cities and municipal boroughs; in each case divided under the following heads: 1. Poor rates (including county and police rates, as far as regards the counties); 2. Highway rate (including value of labour in lieu of rates); 3. Church rates; 4. Police and prisons (in the metropolis, and in cities and boroughs); 5. Rates for all purposes of drainage, lighting, paving, improvements, &c. (in the metropolis, and in cities and boroughs); 6. Rates levied by local boards; with the total of the whole, so as to show the local taxation borne by the country in each year.

And, of the amount of annual grants from the public revenue in aid of local taxation in England and Wales, for the years 1863, 1864, and 1865, divided under the following heads: 1. Law charges and criminal prosecutions, including sheriffs' expenses; 2. Prisons and convict establishments at home; 3. Maintenance of prisoners in county gaols; removal and transportation of convicts; 4. Police, counties and boroughs; 5. Metropolitan police and police courts; 6. Salaries of auditors of poor law unions; 7. One-half salaries of poor law medical officers; 8. Schoolmasters, &c., in workhouse and district schools; 9. Superintendence of county roads, South Wales; 10. Rates for Government property; with a view to show the whole amount so granted in aid."

No. 1.—Return of the Annual Value of Property in England and Wales charged under the different Schedules of the Property and Income Tax, made up to the end of the Financial Year in April of each of the Years 1863, 1864, and 1865.					
Annual Value of Property and Profits charged to Income Tax in England and Wales under Schedules					
Years ended 5th April.	A.	B.	C.	D.	E. TOTAL.*
1863.....	£ 112,908,357	£ 23,223,461	£ 20,628,913	£ 85,088,087	£ 18,350,800,273,404,918
1864.....	£ 113,440,577	£ 27,861,718	£ 30,414,103	£ 97,307,979	£ 17,487,270,276,950,047
1865.....	£ 123,053,944	£ 29,153,450	£ 30,889,559	£ 95,636,761	£ 18,296,977,200,031,791
* Income under £100 not reckoned here.					
Inland Revenue Office, 6th Sept., 1866. FRED. GRIFPER, Chief Accountant.					
AMOUNT OF REVENUE DERIVED UNDER THE RESPECTIVE SCHEDULES.					
Years ended 5th April.	A.	B.	C.	D.	E. TOTAL.
1863.....	£ 4,953,296	£ 579,543	£ 1,039,978	£ 3,283,766	£ 10,492,588
1864.....	£ 4,943,700	£ 439,964	£ 935,274	£ 2,833,441	£ 9,101,994
1865.....	£ 3,700,436	£ 425,934	£ 735,552	£ 2,608,739	£ 7,985,775
A. On property, &c. generally of lands, &c. On schedule B. Profits from occupation of property; the duty is at half that on the other schedules. C. Profits from interest, dividends, &c. D. Salaries and pensions of public officers, &c. E. Salaries and pensions of public officers, &c.					

No. 2.—Return of the Rateable Value of Property in England and Wales subject to Local Taxation.

YEAR.	In the Metropolis.	In the Counties.	In Cities and Municipal Boroughs.	TOTAL.
1863.....	£ 11,156,661	£ 49,677,232	£ 15,523,252	£ 76,357,145
1864.....	£ 13,641,753	£ 57,596,665	£ 16,380,449	£ 87,618,867
1865.....	£ 14,021,400	£ 58,826,115	£ 17,289,850	£ 90,137,365

No. 3.—Return of the Amount raised by Local Taxation in England and Wales in each of the Years 1863, 1864, and 1865, under the following Heads:

	In the Metro- polis.	In the Counties.	In Cities & Muni- cipal Bo- roughs.	Total.
	£	£	£	£
1863.				
Poor Rates	1,431,516	5,418,445	3,325,013	9,174,974
Highway Rates ...	468,025	1,223,504	203,673	1,895,202
Church Rates	28,364	190,178	18,844	237,386
Police and Prisons	37,040	*	144,944	181,984
Drainage, &c.	756,327	423,573	1,325,620	2,505,520
Local Boards	—	289,715	179,661	469,376
Total.....	2,719,272	7,545,415	4,197,755	14,462,442
1864.				
Poor Rates	1,427,322	5,680,583	2,331,414	9,439,319
Highway Rates ...	481,461	1,166,025	179,830	1,827,316
Church Rates	28,657	191,757	21,545	241,959
Police and Prisons	37,363	*	147,825	185,188
Drainage, &c.	744,938	434,204	1,383,601	2,562,852
Local Boards	—	123,946	158,726	277,872
Total.....	2,719,761	7,605,605	4,217,941	14,543,307
1865.				
Poor Rates	1,437,130	5,806,238	2,148,825	9,392,193
Highway Rates ...	522,483	1,278,633	206,846	2,007,962
Church Rates	26,276	196,499	20,748	243,523
Police and Prisons	30,867	*	140,935	180,802
Drainage, &c.	822,019	446,972	1,542,339	2,811,330
Local Boards	—	113,272	217,669	330,941
Total.....	2,838,775	7,841,614	4,286,362	14,966,751

* Included in Poor Rate.

No. 4.—Return of the Amount of Annual Grants from the Public Revenue in Aid of Local Taxation in England and Wales, for the Years 1863, 1864, and 1865, divided under the following Heads:

	1863-4.	1864-5.	1865-6.
	£	£	£
1. Law Charges and Criminal Prosecutions, including Sheriffs' Expenses	215,418	229,038	250,641
2. Prisons and Convict Establishments at Home	298,009	321,591	298,160
3. Maintenance of Prisoners in County Gaols; removal and transportation of Convicts	266,779	282,473	283,748
4. Police, Counties, and Boroughs	193,000	208,000	211,050
5. Metropolitan Police and Police Courts	160,244	167,527	176,159
6. Salaries of Auditors of Poor Law Unions	17,100	17,100	17,100
7. One-half Salaries of Poor Law Medical Officers (including the cost of certain medicines)	96,000	98,000	99,000
8. Schoolmasters, &c., in Workhouses and District Schools	32,300	33,000	34,000
9. Superintendence of County Roads, South Wales	1,223	1,223	1,223
10. Rates for Government Property	27,000	27,000	27,000
Total Amount so granted in Aid ... }	1,316,073	1,384,952	1,398,090

GEORGE WARD HUNT.

Treasury Chambers, 8 May, 1867.

Now it is clear from the above figures that only one-third

of the property chargeable to income-tax in England and Wales is rated and subject to local taxation, *i.e.*, one pound in every three! and this startling fact is proved by the official return I have read to you, and which is irrespective of those other figures I quoted to you previously from Mr. A. Startin's paper, as to the amount of income beneath the amount chargeable to income-tax, and which if correct show the amount rated to local taxation to be decreased to one-sixth, instead of only one-third of the income of the country! There is another class of property, which is a source of vast wealth in England and Wales, but which is not rated to the relief of the poor, and to which I feel bound to allude shortly: I mean the mineral wealth of the country. Iron Mines: There were in England and Wales, in 1827, 266 furnaces producing 653,500 tons; these had increased in 1848 to 623 furnaces, producing 2,008,200 tons of iron. The quantity of iron of all kinds, manufactured and unmanufactured, exported in 1852 amounted to 1,035,884 tons, besides 25,239 tons of cutlery of the declared value of £2,691,697. Add to this the extension of the railway system, and the vastly increased use now made of iron in the building of all kinds of ships, and you may form some idea of the amount and value of property in iron mines. Well, ought not this class of property to contribute to the maintenance of the poor? I refer next to the copper mines of Cornwall. These were wrought with but little skill or effect till towards the year 1700. I pass over the intervening time till 1854, when I find there were exported of brass and copper manufactures 1,851,689 cwts., of the value of £1,761,878. Tin: Cornwall is also the great seat of the tin mines of England. A century ago the average produce of our tin mines hardly exceeded 1,500 tons: it may now be estimated at about 5,000 tons a year. The statistics of lead mines are equally important, but I will not trouble you with them in detail; but I have stated enough, I think, to convince any person of the fact that a vast amount of mine property exists in this country which does not contribute at all towards the maintenance of the poor, although a very notable fact in connection with this must be recorded, *viz.*, that whenever a time of slack trade or distress in a mineral district occurs, the whole of the large number of miners, *i.e.*, the mining population, are all thrown on to the land for relief and support. To go to another part of the county, to another class of property and trade, I would only recall to your recollection the cotton famine in Lancashire, which occurred during the late American war, and which threw upon the poor-rates of that district a burden which they were wholly unable to sustain. I must now mention generally, but as shortly as possible, various other classes of property which to a great extent escape being rated to the poor, or any other local rate. Foremost amongst these is the public debt of the country, which amounts to £780,000,000. Beyond this I will subjoin a condensed statement, which will give an idea of the capital in round numbers, of some of the principal securities of this wealthy country. I have taken it from "Fenn's work on the English and Foreign Funds, Banks, Railways, &c." The following condensed statement will convey an idea of the capital, in round numbers, of some of the principal securities dealt in:

Funded and Unfunded Debt	2805,000,000
British Railway Shares and Debentures	325,500,000
Indian Railway Shares held in England	26,500,000
Colonial Government Securities	16,000,000
Indian Home Bond Debt	8,800,000
London Joint Stock Banks	15,500,000
Irish and Scotch Banks	12,750,000
Bank Stock	14,500,000
Insurance Companies	15,000,000
Mines, British and Foreign	10,000,000
Steam Companies	5,000,000
Telegraphic Companies	9,000,000
Docks, Canals, Waterworks, Bridges, &c.	20,500,000
Gas Companies	6,700,000
Total.....	£1,288,750,000

"This total," the author adds, "is irrespective of the shares of Provincial Joint Stock Banks, of many Land, Discount, and other companies, and of the large amount of Foreign Loans, Foreign Railway Shares, and other Foreign Securities held here, the aggregate of which it is impossible to arrive at, or even to estimate with anything like precision. Moreover, it does not fully represent the value, as a large number of these securities stand above par." Now that is an enormous mass of wealth to contribute nothing to the necessities of the poor of the nation, nothing for the support of the numerous—lamentably numerous—body of lunatics, and other charges which devolve wholly on the land. Can a system be upheld as just or equitable which perpetuates such a state of taxation? Consider for a moment how much of all that mass of wealth existed when the 43rd of Elizabeth was enacted in 1601, and which declared that "Everyone should contribute, according to his *ability*, to the maintenance of the poor." As to the enormous amount of funded property, it did not exist at all when that wise and salutary enactment was made—it has all grown up since: I will give you a few facts on that point. There was no National Debt, in the present sense of the term, in 1601. Loans at that period were raised generally on the Crown revenues for short periods, or by way of gifts from the citizens of London, and in consideration of which they obtained those privileges—in some cases most valuable—which they have retained to the present day. The National Debt, at the period of the Revolution in 1688, amounted only to about £684,000. It did not begin to assume its present proportions—that is, it did not begin to increase rapidly—until the war with France in 1697. In 1702, it was £12,700,000; in 1714, £36,000,000; in 1748, £76,000,000; and so on. I have a table showing the rapid increase during the different periods; but I have quoted enough to show you how that vast amount of wealth has accumulated, and which might otherwise have been expended on, and invested in, the land; and in reference to this part of the subject, I wish to draw your attention to a very important point for consideration, and it is this: Suppose the case of a man who is the owner of an estate, and who has a sum of money to invest, say £10,000. If he invests his money

in the Funds, or other security of personal property, he has to pay the income-tax, and nothing else, for the poor or any other local rate. If he invests it in improving his estate, and in making land worth only 20s. an acre worth 40s. an acre, by draining and otherwise, he has to pay not only all the original burdens on such land for poor-rates, &c., &c., besides income-tax, but he has also to pay an extra amount of all such burdens, in addition to income-tax, on the increased value of his land; and this must act as a strong preventive against any man with a large family investing his spare income or other money in improving his land to the extent he would otherwise do if he were allowed to reap the reward of such investment, without being doubly taxed for his enterprise; and this actually results in an injury to the State, besides inflicting an injury also on the mass of the people by diminishing the productiveness of the land, and therefore curtailing the source of the food necessary for the support of the rapidly-increasing population. The ramifications into which this argument might be pushed are almost endless; but I have followed it sufficiently far to convince you, and I hope all thinking men, how injuriously the present system of heaping all local taxation on to the land, to the exclusion of all other property, must and does react on the whole community; for it is an axiom which I have always maintained that any system of taxation or legislation which favours any one class at the expense of, or to the injury of, any other class, must, in the long-run, act injuriously on the whole community.

I come now to the third head of my subject—Is the present system of local taxation based on equitable principles, or otherwise. You will easily have gathered what is my opinion as to this question, from what I have already read to you. I shall therefore content myself with quoting to you the opinions of others on this point. I will first read to you the memorial adopted by the Board of Guardians of Honiton. The following memoria has been adopted at a meeting of the guardians of the Honiton Union, Devon: "To the Honourable the Commons of Great Britain and Ireland in Parliament assembled, The memorial of the Guardians of the Poor of the Honiton Union, sheweth that, by the Act passed in the 43rd year of her Majesty Queen Elizabeth, all descriptions of property were made liable to be rated for the relief of the poor, which your memorialists submit was a fair and equitable adjustment of the burden, but by subsequent statutes passed from time to time all personal property has been, and is, relieved from its share of this heavy tax. That, with a slight exception, the whole of the maintenance of the poor, including the expense of the county lunatic asylums, is now charged on the real property, which is also subject to heavy charges for the highways, gnaols, and militia, and to three-fourths of the expense of the constabulary force. That the owners of personal property are as much interested in the maintenance of these establishments as the owners and occupiers of real property. Your memorialists submit that these are grievous and unfair burdens on a particular class, which have been increasing of late years to a great extent, and therefore pray your honourable House not to pass any further measures restricting the operation of the Act first above mentioned, but to enact that all kinds of property, whether real or personal, shall contribute a fair and just proportion of the expense and maintenance of the national institutions, and thereby afford some relief to the most heavily-taxed portion of the community; and your memorialists will ever pray." The subject will be discussed at the next meeting of the Chambers of Agriculture at Exeter, Somerset, and Dorset,

* As regards the capital of ordinary shareholders invested in English lines of railway, I must add the following remark, viz., that as most of the English lines are rated to the parishes through which they pass, at so much per mile; and as that rating has to be paid out of the profits, before the ordinary shareholders receive their dividend, it may be said that railway property does not entirely avoid contributing to local rates; but this cannot be said of the holders of debenture stock and preference stock, as they receive a fixed dividend (provided the line be a solvent one), irrespective of the profits of the line or the rates paid by it, and income-tax only is deducted from their dividend.

and is exciting general interest among the owners and occupiers of land in the West of England. It is a question of serious import whether real property should be made to bear the whole of the local burdens, personal property being almost entirely relieved from contribution to them. Now that appears to me to state a most sensible and equitable view of the case; and I hope all, or at least many, other boards of guardians will express a similar opinion, and press similar memorials through their county members. I will next read you a memorial of a similar nature, from the Justices of the Peace for the county of Devon, and I think there is no public body of men entitled to more respect from any Government than the general body of magistrates of any county, and especially on matters of business connected with the counties. The Justices of the Peace of the county of Devon have forwarded a memorial to the Home Secretary, calling attention to the expenses of the police force and the militia. They suggest that, as the services rendered by these forces are beneficial to the whole community, their expenses should not be left to fall in their present undue proportion on the county rates, which are paid only by the owners and occupiers of real property. That is their view. See next what is thought and said by the Worcestershire Chamber of Agriculture. A meeting of the committee was held at the Crown Hotel, on the 28th ult. A letter was read from Mr. H. George Andrews, secretary to the Somersetshire Chamber, enclosing report of meetings of that Chamber on the subject of local taxation, and the unfair exemption from poor-rate of income arising from personal property, upon which a discussion took place, and the following resolution was unanimously adopted: "That this Council, having taken into consideration the great and continued increase in the poor-rates and the charges thereon, is of opinion that the present system of rating is unequal and unjust, and that income arising from personal as well as real property ought equally to contribute to a national rate, for which purpose the income-tax assessment offers an economical means of taxation, and this Council will use its best endeavours to bring about a system of national rating upon that basis." I entirely concur in that view. The next thing I will read to you is the notice of a motion to be brought forward in the House of Commons by Sir Massey Lopes, as follows: "That inasmuch as the local charges on real property have been of late years, and still are gradually increasing, it is neither just nor politic that those burdens shall be levied exclusively from that description of property." That notice appeared in the *Times* of April 21st. I sincerely hope that motion will be carried, and that it will be well supported by all the county members, and that it will be followed by some practical result. The above opinions, which I have taken from public journals, will show that the agricultural interest is beginning to feel the pinch of the heavy and increasing taxation to which it is liable. No other class is so heavily burdened with taxation and other charges as the landed interest; and it behoves both owners and occupiers to unite, and demand from the Legislature some mitigation of the oppression which real property labours under, especially as additional local taxation is looming in the future, viz., the maintenance of turnpike roads, and compulsory education. If a man buys an estate, which is termed "real property," and gives £50,000 for it, the charges upon it, in the shape of poor-rates, highway rates, and other local taxation commence at once, in addition to the income tax; but if a man puts his £50,000 into the Funds, or any other security of a

personal nature, he will not in that case be called upon to pay one farthing towards the exigencies of the county at large, such as the maintenance of the poor, &c., in respect of that property at least. I cannot persuade myself that such a system is either reasonable or equitable. I will illustrate my argument still further by the following case, which was noticed in most of the public journals in January last: In the beginning of this present year, eight hundred thousand pounds British Three per Cent. Consols belonged to a Mr. Crawshaw, who lately departed this life. A transfer of this property took place; no expensive conveyancing stamp duty was required, a mere power of attorney was sufficient, and the whole transaction was accomplished in less than half-an-hour; but let it be borne in mind that the late Mr. Crawshaw was never called upon to pay a penny for local rates assessed upon the above funded property. Now, I will tell you a contrast to this system, a contrast which I think is well worthy of imitation. Within six hours' sail from the English shore are situated the Channel Islands. In those islands every person who is worth about one hundred pounds sterling and has property of any description is taxed for local expenses; no matter if the property is vested in the British, French, or other funds: even the ships on the sea are not exempt. I will confine my observations to Guernsey: the whole amount of property belonging to individuals was lately assessed at £3,896,500; from this amount the direct taxes are raised, and no exception is made as to whether the property is real or personal: all is taxed and contributes to the common weal. The injustice of such a system, which exacts no pay, except income-tax, from the owner of £800,000, producing him an annual income of at least £25,000, whilst the payment of poor-rates is frequently exacted from poor people hardly able to maintain themselves (and I regret to say that many such cases have been brought before me as a magistrate, by summonses for non-payment), is too flagrant to require further argument or comment from me.

I shall, therefore, now pass on to the fourth head of my subject, viz.: What is the remedy for this evil? This I shall state in a very few words. It is combined action of the agricultural classes, and a united and determined pressure on the Government of the day by means of your county members, to which end men must be sent to Parliament who are capable of efficiently advocating the interests of the class they have to represent. The example set to other counties by the county that has sent your chairman to Parliament is well worthy of imitation, and if farmers hope to be able to hold their own against other classes, which are sure to be well represented in the new Parliament to be soon elected; they must exercise more independence in the selection of their representatives than has been the case sometimes in times past.

I pass now to the fifth and last head of my subject, and this, in my opinion, is the key-stone of it, viz., to contrast the position of an occupier of a farm under the existing system of local taxation with what it would be under such a change as I advocate, and see how his position would be affected pecuniarily by such a change. Now, I will suppose the case of a man occupying a farm of say 300 acres at 30s. per acre. First, let us take his rates and taxes under the present system. Two rates in the year of 1s. or 13d. or 14d. each, is a very low average, and that amount is usual in the district where I live, say 2s. 3d. in the pound. Suppose the rent of £450 a year to be assessed at say about 80 per cent. less on the average, that would reduce his rent on which he would have to pay his 2s. 3d. rate to about £320, and his rate on that would amount to

an annual charge of £36. To this must be added his property-tax (schedule B), at 6d. in the pound on half his actual rent; that would amount to £5 12s. 6d. Now, before I proceed further to calculate my friend's taxation under my proposed system, I must show what that system would be; and for this purpose I must revert to my income-tax return previously read, and see the amount raised by a sixpenny income-tax, and next the amount raised by the rates on the rateable property throughout the country. By a reference to that return, I see that a 6d. income-tax for the year 1865 produced £7,985,773, and for the same year the total amount raised by county rates was £7,841,614. These figures may vary in totals from year to year; but it is plain that a 6d. income-tax extra would cover all the charges now borne by real property only. I would propose therefore to abolish quite, or nearly so, all local taxation as at present imposed by poor-rates and other rates, and to impose instead thereof an additional income-tax of, say, 6d. By this means, the farmer with 300 acres, as above shown, would cease to pay his £36 for poor's-rates, and he would pay instead thereof his extra income-tax on Schedule B, as shown above—viz., £5 12s. 6d. It is plain therefore how very greatly, and I must add justly, the agricultural interest would be benefited by the alteration I have proposed. And who, I ask, could reasonably object to such an equitable readjustment of taxation? All the poorer classes in towns, as well as in counties, would in like manner be benefited, and it would be only the very rich holders of funded and other personal wealth who would be called upon to pay a larger amount of income-tax, and to contribute something towards the maintenance of the poor of the nation, a clear and undoubted obligation which many of them now escape almost entirely, so far as regards their personal property, now exempt. Since writing the above, I have seen a provincial paper from North Wilts, which confirms very strongly the views I have expressed; but it puts the case of a farmer's rates at nearly double what I have done—viz., at 4s., instead of 2s. or 2s. 3d. I will read what is said. After quoting the Act of Elizabeth, "That all the inhabitants of the Realm do contribute to the rate according to their ability," it proceeds to say: "So much for the nature and character of poor and local rates. We now turn to the plan of assessment, a subject which we hope presently to show affects all classes of ratepayers. With little variation the mode of assessment which prevailed in the days of Elizabeth is adopted at the present time, an adherence to tradition and the custom of the past which testifies to the conservative character of the English people. In the reign of Elizabeth there was nothing to tax but land and houses; in the present day, however, the area of taxation should not be confined to such prescribed limits. During the last quarter of a century great changes have taken place in England, and besides the wonderful development of real property, personalty has accumulated to the extent of nearly six hundred millions, not one penny of which is assessed to poor and local rates, only one hundred millions of real property being so assessed. The personal property consists of Consols, shares in mines, railways, ships, manufactories, and other commercial enterprises. This is a class of wealth which is continually accumulating, and is, assessable only to income-tax, escaping, however, all poor and local rates. Let us give one or two illustrations by way of example. A farmer occupies, say, one thousand acres in a parish, which we will assume are assessed to the poor rate at an average of 40s. per acre. Presuming the poor and high-

way rates to amount to 4s. in the pound per annum—and this is a low estimate—he will pay £200 per year on that one rate alone, in addition to income-tax. In the same parish resides a man whose property is in the funds, or some commercial undertaking. Now, a capital house and grounds can be obtained in the country for £100, and the owner of thousands of pounds of funded property would disburse only £20 in poor rates paying, of course, income and assessed taxes in proportion to his liability under those heads. Look at the injustice of this course. The duty of maintaining the poor devolves as much upon the holder of funded property as the farmer; the benefits of good roads, police establishments, asylums for the insane, refuges for the poor, places of confinement for criminals, are shared alike by both men, yet the richest man of the two pays just one-tenth of the amount disbursed for those purposes by his neighbour. Further, unpropitious weather, deficient crops, cattle murrain, or other contingencies incident to farming, may materially affect the income of the farmer, while the owner of Consols or shares in established undertakings is free from such risks. There is yet another aspect from which we may view the injustice of this mode of assessment. A farmer may have money in Consols, but, anxious to develop the resources of his land, and thus add to the national property, he draws, say, £1,000 from the funds, and sinks it in manure and farm buildings. While in the funds he only paid income-tax, he increases the value of his farm, and has to pay income-tax, and poor rates to the amount of 4s. in the pound additional. Precisely the same state of things applies to the local taxation of towns. Traders and manufacturers are rated to the maximum for the maintenance of the poor, sanitary improvements, the formation of streets, the provisions of lights and other appliances for social comfort and happiness, while owners of wealth arising from personal property pay only on the assessments of their private dwellings, which are rarely rated beyond £100 or £200 per year. The above remarks have fairly described the rise and progress of local rating, and the unfair mode of assessment which prevails consequent upon the great alterations in the nature of property caused by the development of the resources of the nation. The remedy which we suggest is that personal wealth shall be liable to local rates, in the same proportion as real property. There is really no hardship in this, and it is gratifying to find men of eminence recognising the importance of the matter. The Chambers of Agriculture have been discussing the question, and Sir Massey Lopes, a Wiltshire member, has given notice in the House of Commons of his intention on an early day to move a resolution to the effect that, inasmuch as the local charges on real property had been of late years, and still were, gradually increasing, it was neither just nor politic that those burdens should be levied exclusively from that description of property. We may, therefore, shortly expect to see the matter brought before Parliament; and though it is hardly likely any definite course will be adopted by an expiring Parliament, the question will be put in train for the consideration of the constituencies who will have to elect a new House early next year. In the event of personal and real property being equitably assessed, it is calculated that an average annual rate of 4d. in the pound will be sufficient for all poor-rate purposes. Of course, just as rates are higher in some parishes now than others, so then there would be some parishes assessed above and others below the average; but that could easily be remedied by the adoption of the principle of county rating, to be succeeded, if deemed

desirable, by a national assessment. There would, of course, be a corresponding relief in the incidence of local taxation. These reforms, if adopted—and we believe public opinion will insist upon a change—will take a great burden from off the trading and industrial classes; a more liberal treatment can be pursued towards the poor, for a penny rate would do much, while sanitary reforms, supplying towns with water, providing recreation-grounds for the children of the poor, and many other social benefits will be secured at a moderate outlay. It certainly seems unjust, when we consider that the poor are maintained and public improvements effected at the cost of the occupier, while the owner escapes. The wonder is, now that the evil has been fully grasped, that men bore such burdens for so long a time. In the metropolis the injustice is even greater than in the country. ‘Landowners of fabulous wealth,’ says the *Saturday Review*, ‘who own the freehold of huge tracts of London—property so valuable that it almost defies calculation—pay nothing at all; while the occupier of the poorest hovel in Bethnal Green has to scrape together, out of his weekly earnings, the most disproportionate assessment to the cost of the Thames Embankment, or the approaches to Covent Garden.’ The case is stated in these few lines with remarkable force, and will enable our readers to form some estimate of how unfairly local taxation has been levied in the past.” I must say that I cordially concur in the general view expressed by the writer of the above. The only argument I have ever heard used against the proposed remedy is that a local waste of money would ensue if the expenses were paid by public money instead of by a local rate. I do not believe that such would be the case. I should advocate the retention of the present Boards of Guardians to manage the local expenditure. All local accounts again might be subjected to an audit by the Court of Quarter Sessions, assisted by the County Financial Boards, such as it has been lately proposed to establish. These again might be controlled by an efficient Government supervision, the grant to any county, or to any district union, being limited to a certain sum, say, perhaps, the amount of expenditure taken for an average of the last three years; and any excess beyond such sum so granted to be borne by a rate on such district union, or by the county; but all these are matters of detail, and all such, including the alterations of the amounts to be paid to the income-tax under the different schedules, and the lowering of the income-tax to take in incomes below the present standard—all might be left to a fair adjustment if once the principle is conceded of remedying the present most unjust system. But one result would certainly ensue from the local rates being paid from income-tax, and that is a more efficient and responsible supervision by a Government department over a very large amount of annual income, amounting in the year ending 25th March, 1866, to no less a sum than £9,373,722, which is very nearly, if not quite, equal to one-seventh of the whole imperial revenue of the country; and under the present system that vast sum is raised and administered by no higher authority than the parish vestries. That is a statement taken from Mr. Startin’s paper. I am, however, sure that much benefit would arise from more responsible, and a more efficient, as well as a more liberal administration of the law for the relief of the poor. It is especially notorious that the very inadequate salary paid to the medical officers of Unions makes it difficult to obtain properly-qualified gentlemen to fill such situations, and still more difficult for the medical men, who are appointed to perform their onerous duties in an efficient manner, including

the provision of medicines for the poor. I am sure that a more liberal system of treatment for the sick poor would be not only more humane, but also in the long run more economical to the country. I fear, gentlemen, that I have wearied you by the length to which this paper has grown, longer much, I assure you, than I originally intended; but the subject is one of such vital and daily increasing importance, that I could not neglect the various statements and figures I have brought to your notice, without doing an injustice to the cause I was called upon to advocate here. I have shown—at least I have endeavoured to do so—the origin and date of the existing Poor-law, the declared object of which was, that everyone should contribute according to his *ability*, i. e., the ability of *all real property*. I have shown that *real property*, as land is called, was *then* almost the only class of property available for being made liable by enactment to maintain the poor of the nation. But that is no reason why such an injustice should be perpetuated by the Legislature, and patiently endured by the owners and occupiers of land, when, nearly three centuries later, a mass of funded and other invested property has been gradually accumulated, which wealth pays nothing towards the poor of the country, although it exceeds very considerably the annual value of the property which alone is rated for the relief of the poor. I have shown what I think would prove a remedy, and, I will add, an equitable remedy, for this great and palpable wrong; and I have shown also how this remedy should be brought about by the combined efforts of the class to which my audience belongs. I have also shown how the interests of that class would be affected in a pecuniary manner by the remedy I have suggested. I could have enlarged much more on this subject, which opens out such a wide and fertile field of arguments which might be adduced in favour of an alteration of the existing system. But I have already trespassed too long upon your time; and I will conclude by saying that I hope you and your friends in the various counties will not let this important matter drop. To your hands and to theirs, I now commit it; and I only regret that the rules of this Club preclude me from asking you to pass a formal resolution on the subject, because it is only by such legitimate action, following upon discussion, that the great end can ever be attained of reforming great evils which have existed for centuries. (cheers).

Immediately after Sir George Jenkinson had concluded, Mr James Howard, of Bedford, suggested that, in order to prevent members from leaving the room to obtain information respecting the statement of the Prime Minister in the House of Commons that evening concerning the intentions of the Government, the Chairman should read a brief summary report of the right hon. gentleman’s remarks which was published in an evening paper. After some objection, on the ground of the irregularity of such a proceeding, the Chairman complied with the request.

Mr. J. TRASK (Higgleage, Yeovil), having then risen to commence the discussion, said he thought the whole of the members of the club were much indebted to Sir George Jenkinson for having brought the question forward, especially as it was a question which before any legislation could take place upon it must be a great deal more ventilated than it had been hitherto. Sir George started with a fallacious assertion—namely, that according to the 43rd Elizabeth every individual was to be rated according to his ability. He held in his hand the exact words of that statute,

and he found that the ability of the individual was not mentioned at all. What was mentioned was the ability of the parish, or of the property of the parish. If it would not occupy too much time, he would read the very words of the Act as cited by Lord Portman in a recent charge to the Grand Jury in Dorsetshire. They were as follows: "And also to raise weekly or otherwise, by taxation of every inhabitant, parson, vicar, and other, and of every occupier of lands, houses, tithes impropriate, appropriations of tithes, coal-mines, or saleable underwoods, in the said parish, in such competent sum and sums of money as they shall think fit. . . . And also competent sums of money for and towards the necessary relief of the lame, impotent, old, blind, and such others among them, being poor, and not able to work, and also for the putting out of such children to be apprentices, to be gathered out of the same parish, according to the ability of the same parish." Commenting on this, Lord Portman said: "Thus it was not the ability of the inhabitant, not of the man, but according to the ability of the same parish." The 43rd of Elizabeth had been the subject of a great deal of litigation. It was still in force, all assessments being made in accordance with it; and if gentlemen wanted to go back to it, they should make an assessment according to their interpretation of that act, and carry it to the Court of Queen's Bench for approval. The principle of interpretation adopted by the Judges was, Lord Portman said, "that all assessable property must be locally situated within the same parish; that it must be visible; that it must be productive." Before admitting for a moment the principle of rating invisible property—the principle of rating what a man had earned in trade or commerce—let them consider whether that was practicable. He did not believe it was. Living, as he did, in a parish where the rates had been doubled within the last few years, he would of course be glad to obtain some relief; but he could not conceive how he was to do so through the course proposed by Sir George Jenkinson. In the first place he did not know that Sir George could give them any authority, but at all events he had not given any, in favour of the principle that land should be relieved from the duty of supporting the poor. The rates raised for the relief of the poor had always been looked upon equitably in the same light as tithes. He might here quote words from the pen of one of the greatest living writers on that subject. He meant Mr. John Stuart Mill (laughter, Oh! oh! and Hear, hear). He was perfectly well aware that Mr. Mill was not an authority in the eyes of the remnant of Protectionists that still existed (laughter); but nevertheless he was an authority, and a very great one. (Mr. J. HOWARD: "With the English nation.") In an article on exceptions to equality of taxation, Mr. Mill said: "Suppose that there is a kind of income which constantly tends to increase, without any exertion or sacrifice on the part of the owners; those owners constituting a class in the community whom the natural course of things progressively enriches, consistently with complete passiveness on their part. In such a case it would be no violation of the principles on which private property is grounded if the state should appropriate this increase of wealth, or part of it, as it arrives. This would not properly be taking anything from anybody; it would be merely applying an accession of wealth, created by circumstances, to the benefit of society, instead of allowing it to become an unearned appendage to the riches of a particular class. Now this is actually the case with rent. The ordinary progress of a society which increases in wealth is at all times tending to augment the incomes of landlords—to give them both a greater amount and a greater proportion of the wealth of the community, independently of any trouble or outlay in-

curred by themselves. They grow richer, as it were, in their sleep, without working, risking, or economising. What claim have they, on the general principle of social justice, to this accession of riches? In what would they have been wronged if society had, from the beginning, reserved the right of taxing the spontaneous increase of rent to the highest amount required by financial exigencies?" Now he (Mr. J. Trask) would ask whether the value of the land of this country had not been greatly increased by the thriving of trade and commerce? The prosperity of agriculture depended, he maintained, on the prosperity of trade and commerce. Trade and commerce increased the receipts of the working-classes, and thus led to increased consumption. There was one further extract which he would read. Landlords often said that they paid the rates, and occupiers as often said that they paid them; but he (Mr. J. Trask) maintained that neither paid them (laughter). He had given his authority, and he should be happy if some gentleman would give a better. Mr. Mill put local taxes on precisely the same footing as the land-tax, and said: "But whatever may be thought of the legitimacy of making the State a sharer in all future increase of rent from natural causes, the existing land-tax ought not to be regarded as a tax, but as a rent-charge in favour of the public—a portion of the rent reserved from the beginning by the State, which has never belonged to or formed part of the income of the landlords, and should not therefore be counted to them as part of their taxation, so as to exempt them from their fair share of every other tax. As well might the tithe be regarded as a tax on the landlords. The whole of it, therefore," he says further on, "is not taxation, but a rent-charge, and is as if the State had retained, not a portion of the rent, but a portion of the land. It is no more a burthen on the landlord than the share of one joint-tenant is a burthen on the other. The landlords are entitled to no compensation for it, nor have they any claim to its being allowed for, as part of their taxes. Its continuance on the existing footing is no infringement of the principle of equal taxation." In a foot-note Mr. Mill says: "The same remarks obviously apply to those local taxes of the peculiar pressure of which on landed property so much has been said by the remnant of the Protectionists" (laughter). The remnant of the Protectionists in the county of Somerset had been agitating this question, but the owners of land generally kept aloof from the movement, being perfectly aware that the object was impracticable. Sir George Jenkinson said that only one-sixth of the income of the country contributed to the poor-rate (A VOICE: "One-third"). One-third according to the income-tax valuation, but one-sixth as regarded the income of the whole nation. The movement in Somerset was a movement for rating the entire income, poor or peasant being treated alike. One-sixth of the entire income was about £118,000,000. Sir George said in the latter part of his speech that a tax of 4d. in the pound would produce what was required to meet the whole of the local taxation. Was it possible to raise rates for local purposes from the wages of labourers which amounted to about a half the whole income of the country? As a farmer and an employer of labour, he knew perfectly well that if his labourers' wages were rated, practically the amount levied would come out of his own pocket. Sir George remarked that railways were not rated.

Sir G. JENKINSON said he must protest against the constant personal allusions of the speakers. What he said, however, was not that railways were not rated, but that the incomes of the shareholders were not rated (Hear, hear).

Mr. J. TRASK continued: Railways were rated heavily. For example, the agricultural value of the Bristol and Exeter

line was from £20 to £30 per mile, and that railway was rated at about £1,100 a mile. Clearly, therefore, the profits were rated before a dividend could reach the pockets of the shareholders (Hear, hear.) To rate the profits as well would be to rate the same property twice over; it would, in short, be a monstrous injustice. Railways were in the same position as land, being rated according to value. It was trade and commerce, combined with railways, which had so greatly increased the value of land, and it would be simple confiscation to make other kinds of property bear the burden which justly belonged to real property. When trade developed itself agriculture began to share the benefit in its prosperity, and although it has been stated that all the burthens were thrown on the land, house property had so increased that it now considerably exceeded the landed property, and this vast increase had been created, and the rates on it principally paid from the profits of trade. [A VOICE: "How about mines?"] Every one admitted that mines ought to be rated, and at that moment there was a committee sitting in the House of Commons, to endeavour to elucidate some fair mode of rating them; but the case of mines did not affect the general question, it had reference only to the few districts in which mines existed. The principle of a payment into the national exchequer advocated in the paper which had been read involved the total annihilation of local control, and he (Mr. J. Traak) would rather have his rates doubled than give up that principle. The idea that the profits of trade and commerce should contribute, and that farmers as guardians or waywardens would be left to dip their hand into the national fund, was certainly very far-fetched (laughter.) It was, in fact, quite ludicrous. Again, acknowledging that they were all much indebted to Sir George Jenkinson for introducing the subject, and agreeing that there was a great deal of property now exempt that ought to be rated, he contended that it was desirable to confine the inquiry to the question, What property now exempt should be added to the poor rate assessment?

The Rev. GEORGE DAVIES (Hall-place, Romsey) said: According to the speech made by the gentleman who had just sat down, we might, with respect to the present meeting, quote the words of the *Saturday Review* on the Irish Church, when it said there was a kind of see-saw arrangement in the organ, by which it played now the Old and now the New Hundredth (laughter). Let them not forget, however, that although at their club meetings they spoke as farmers one to another, they also spoke in days when the press took up everything they said; and they were therefore, in that light, speaking beyond themselves to the world. [A VOICE: "Speak up."] When gentlemen said, "Speak up," he was reminded that there was nothing in the world that would make a man "speak up" like a farmer's dinner, as he well recollected, from the specimen they once gave him (laughter). However, he did not think any question could come before the House of Commons or the people of England greater in itself than that which had now been introduced to their attention; because, inasmuch as the pocket was the heaviest part of the Englishman, and the Englishman was the heaviest part of the world, they had the heaviest part of the world to speak of. Although the proposition brought before the Club might be said by people unaccustomed to changes to be something new, yet, when we saw the Irish Church abolished in an hour, we should not be startled at a thing simply because it was new (laughter, and "Question"). As a member of the Farmers' Club, he ventured to record his opinion in favour of Sir George Jenkinson's proposition, which would, although new, ripen very rapidly. It was a question that concerned all of them. If they took the smallest concern, the principle would be found

equally to apply. It had been said that land was the great and secure basis upon which everything was ultimately placed; and the other day he happened to look over divers books in his library, and took the liberty of marking a couple of passages, which he would read. For instance, Lord St. Leonards, in his *Handy Book on Property-Law*, says, "By buying up the land-tax on your property, you would simply assist the Government in imposing a new tax on the land, which they will no doubt do as soon as the land-tax is generally redeemed." The next book he happened to take up was of another kind—it was Southey's *Book of the Church*; and the author, speaking of the times before the kingdoms of the Heptarchy, said, "The full predial tithe was intended. The smaller tithes were at first voluntary oblations; and the whole was received into a common fund, for the fourfold purpose of supporting the clergy, repairing the church, relieving the poor, and entertaining the pilgrim and the stranger." Now, that related to a very remote period—to about 700 years after Christ; and what it practically said was, that tithes were granted for the fourfold purpose of supporting the clergy, repairing the church fabric, relieving the poor, and educating the people (Hear, hear). Therefore, supposing that our tithes were fair—and the Commutation of the Tithe Act was the greatest measure ever passed ("No, no")—at any rate, it was the only thing that ever induced them as farmers to lay out oilcake on their sheep; for most of them, he fancied, would rather have sold the sheep without their oilcake in them if possible (laughter). He would maintain that those who had advocated the dis-franchisement and dis-establishment of the Irish Church could never yet have made themselves acquainted with the purposes for which tithes were formed, or what was their full purport and intention when they were granted (Hear, hear). He had just read, from the historian's own words, the fourfold purpose for which they were granted; and if we looked into the entire historical question, who should say that when the tithes belonged to the Roman Catholics they did not, by their almonries and monasteries, relieve the poor and sick? And whatsoever education there was in that dark age, did they not find it? Therefore, when we came to look upon the burdens put upon land now, did we look at the real import of those burdens when they were imposed, and did we spend the money as it was collected under the old law? The question before the Club was no doubt one of the greatest of the age; and if we could only get an income-tax made the basis of all assessments it would be a good thing for the country at large. He himself saw no reason why there should not be a most rigid scrutiny into the income of everyone; and then, by a proper arrangement, we should have one great tax for the whole nation, and should, by-and-bye, relieve the Chancellor of the Exchequer of his work of making a penny per million the basis of everything. As farmers, they asked for no immunity and exception, and for no peculiar privileges as agriculturists (Hear, hear). They only asked that they might be assessed as other people were, and that other people might be assessed as they were. They came to ask for what they asked with respect to the redemption of the malt-tax. They did not perhaps believe in free-trade, but they had to live under it (laughter); and when everything else was brought into the country free, let them do the same for their own barley as they did for their own wheat; and in these days, when we were told that the sentiment of the nation was in favour of everybody recording his opinion through an extended franchise, it could not be that they as farmers should be prevented from making their voice heard upon their own enactments, and in respect to matters that so closely affected them, who, he might say in conclusion, were most loyal to their sovereign and the country, and who were

anxious to support everything that was legal and right (cheers).

Mr. J. A. WILLIAMS (Baydon, Hungerford) was firmly convinced that the majority of his brother farmers would fancy that the paper read by Sir George Jenkinson was a capital paper on behalf of the agricultural interest. As regarded the remark that had been made about Sir George going a good deal into details, they need not trouble themselves much about that, because they might take it for granted that his statistics were correct. He for one should assume that they were so, and would pass on to make one or two general remarks. The expression "landed interest" was very commonly used, and what he wished to say was that in point of fact the Legislature never intended that the real property of this kingdom alone should be subjected to the burdens that were imposed. Let them assume if they like that it was, as one speaker had pointed out, not the capability or ability of the individual, but of the population, that was to pay; the parish was formed of individuals, and the result was therefore the same. Sir George Jenkinson had mentioned a vast number of interests in this kingdom that were exempted, but there was one which he did not much refer to, namely the shipping interest. What parish could we assess to the shipping interest? (Hear, hear). It was an interest that belonged to no parish: it existed on the broad seas, and yet it was a vast property, earning a vast income, which certainly ought to contribute to the maintenance of the poor of the country. That was an interest, therefore, that could not be locally assessed, and it must be assessed in a general rate upon the whole kingdom. He remembered asking their excellent friend Mr. C. S. Read about twelve months ago whether he was aware there was a bill annually brought forward in the English Parliament to exempt personal property from the liabilities of the 43rd of Queen Elizabeth. He said he was. That was positively a most astounding fact very little known. Why, the law at this present day said that all property shall maintain the poor—all property (Hear, hear). He suggested to Mr. Read that if about 50 or 60 county members could be induced to stay behind at the close of the session, when what was called "The Slaughter of the Innocents" took place (laughter), and when about 80 bills were brought up, read, and passed into law, some good might be done. Amongst these bills was this one for exempting personal property from liability to maintain the poor; and if these 50 or 60 county members would only stop and move that the bill be read that day six months, the consequence would be that for a year at any rate personal property would have to take its share in maintaining the poor (Hear, hear). If that were so, there was nothing unjust: it was but a bare act of justice. Their worthy friend Mr. Howard, present, would perhaps excuse him for bringing him upon the carpet to illustrate the subject, and he should not have done so but that it was a very strong case in point (Hear, hear). If they went down to Bedford they would find that the Messrs. Howard had there first-class iron-works and an establishment for agricultural implements. What was the consequence? He invited anyone to look at the property and admire it. That property was certainly assessed to the poor-rate, but to what amount? To the amount of twelve acres of land, and the building standing upon it. The real property only of that establishment was rated. Their friends the Howards were farmers also in Bedford; but if we took them in their farm we should find that not only was their property rated, but their mode of income. In that case it was the land itself that formed the basis of their business, and it was assessed to an amount very far superior to the iron works. He begged pardon for mentioning

this; but again said he could not resist it, because it was so strong an example; and he would add the remark that no doubt where the Messrs. Howard could calculate the profits of their farm by tens, they could calculate the profits of their iron-works by hundreds (cheers). He appealed to his friend near him (Mr. Trask), who had made so strong an argument in favour of the exemption of this kind of property, whether these iron-works, which were an undoubted credit to the entire agricultural interest (Hear, hear), ought to be free from local taxation. Then there was Mr. Crosskill too, who was present. He had some iron-works; and he asked him the question pointedly, whether for the business, exclusive of the building that the works were carried on in, he paid a single sixpence for local taxation? He did not. Then there was another point. The improvement of land had been spoken of, and it had been said that the tenant-farmer had nothing to do with that, because it was the landlord's question. Granted that the landlord had a certain amount of money under an Act of Parliament for the improvement of land, and that he took up from the Government a certain sum to improve his estate: he paid four per cent. interest to the Government for it, and he improved his estate. Now, if a valuer went over and valued the property, he would make an assessment accordingly. The landlord would have to pay for the improvement of that estate upon money he had taken up from the Government at four per cent. Could that be a fair thing? (Hear, hear). That was private property, which would pay no local taxation whatever, except in connection with the land upon which it was expended. Let him now bring himself forward as an illustration. In the county of Berks he occupied a few acres of land, and in the county of Wilts in the next parish he was an owner and occupier also. His position was this: he had had to assist in building two new gaols—one at Reading, the other at Devizes; he had had to assist by something considerable in the building of two workhouses—one at Lambourne, the other at Hungerford; he had had to contribute to two lunatic asylums—one at Littlemore, Oxford, and the other in Wiltshire; he had had to contribute to two sets of militia stores. Now, would anyone tell him why Her Majesty's militiamen should be sent down into the different counties, located there, and maintained at the expense of the occupiers of real property? (Hear, hear). It was a shameful thing, and the gentleman on his right (Mr. Trask) could really know nothing about the matter; it was in point of fact a monstrosity that could really be no longer justified (Hear, hear). Then the police were supported all over the country, and they came to the local authorities for their maintenance. Wiltshire paid from £11,000 to £12,000 a year for the police. And now we were threatened with a turnpike and educational rate (laughter, and Hear, hear). He could mention the case of Mr. Morrison, the great linen-draper in London. He made millions of money, and went down to Basingdon, in Berkshire, and bought an estate, and then he became a local taxpayer; but he was not a local taxpayer while he was making his millions of money in London. Was there anything fair, anything British about this? He stood in that meeting as an Englishman, and protested against it. They talked about free trade; let us have it then (laughter). The class of farmers were said to be men who grumbled and paid. True, they had done both—they had paid, but they had had cause to grumble; do away with the cause and they would grumble no longer (cheers).

Mr. J. TRASK (Northington Down, Alresford) said he should like to mention one or two other forms of property that ought to contribute to the maintenance of the poor. Timber was exempt from rating where the stools did not rot

Game was not rated—(A VOICE: It can be, though). These were things, at any rate, which might have been mentioned amongst the others. He should have preferred Sir George Jenkinson, instead of using the word "personal property," calling it "capitalized wealth," or something of that kind. Personal property might include anything—a man's watch, or anything else he had.

Sir GEORGE JENKINSON: Yes; but it is a legalized term.

Mr. TRASK said no doubt it was; but it was a term that could not be very well got at. When a man's wealth was turned into capital which made labour, then we might rate it. He must say he should be very sorry to see farming stock-in-trade rated. Mr. Mill's ideas had been referred to, and it had been said that a good many men who made paupers did not help to keep them. That was a point that ought to be insisted upon more than it was. He had nothing more to say, but merely rose to call Sir George's attention to timber and game, which were both great sources of wealth in some parts.

A VOICE: And misery, too (Order).

Mr. T. DUCKHAM (Baysam Court, Ross) said he certainly could not agree with the last speaker in considering that timber and game were great sources of wealth (a laugh, and Hear, hear). In the first place, timber occupying land that should produce food for the country, tended to decrease its natural wealth; in the next place, game destroyed the produce of the farmer, and very materially detracted from the inmost riches of the country; it demoralized the people, it increased the local taxation, and, instead of being a source of wealth, it was a national disgrace (cheers). He was sorry to say anything that might be differed from, but he had long believed that the present system of the game laws filled our gaols, filled our workhouses, and thereby increased to a very considerable extent our local taxation, while it decreased the natural productions of the soil (cheers, and Question?). Whether the meeting disagreed with him or not, depend upon it nine-tenths of the farming interest throughout the country would agree with him (cheers). Sir George Jenkinson, in bringing forward this subject, noticed that considerable public attention had been drawn to it during the past few months. He (Mr. Duckham) was quite old enough to remember that a good deal had been said of it for some 20 years past, and it was a subject he had long watched with much interest, and the more he reflected upon it the more satisfied he was in his own mind that the existing system was not orthodox. He was quite convinced that it was against the real principle of local taxation that one portion of the wealth of the community should be called upon to maintain its poverty, while the other was completely relieved from the burden. Sir George had shown that only one-third of the income of the nation was taxed for the maintenance of its poverty, and that was a point he (Mr. Duckham) had long felt ought to be promptly remedied. Mr. Frask, who seemed to think that according to the 43rd Elizabeth all that was required was to raise up the taxation upon the ability of the parish, and that that ability should rest upon the occupiers of the soil and upon the occupiers of the houses, must have forgotten that, however the argument might once have answered, it was no longer tenable. There were now so many sources of income which did not exist in the reign of Elizabeth—at that time real property was perhaps the principal, if not the only property known; but now we had a multiplicity of sources whence immense incomes were derived, and it was monstrous to think that those incomes should be raised by the wear and tear of the bones and sinews of the industrial portion of the community, while, as soon as they became incapacitated from answering the purposes of those whose wealth had been amassed out of them, they should be turned adrift and

placed upon the occupier of the soil for their maintenance. That certainly was indefensible; and he could not really think Mr. Trask was in earnest when he said he was a farmer (laughter) and that the farmer ought to bear the whole burden of local taxation. The same gentleman also afterwards said he should be sorry to see the day when the tax-collector should dip into the pockets of any one else besides the occupiers of real property. In saying that he showed that his sympathies for the occupiers of the soil were extremely limited (Hear, hear).

Mr. TRASK said he did not say exactly what Mr. Duckham had represented; he said there was a great deal of property not rated which ought to be rated, and the main point he urged was, that an inquiry should be asked for into the whole question.

Mr. DUCKHAM: Mr. Trask said there was a good deal of property exempt from taxation. There were mines and woods. He (Mr. Duckham) was quite aware of the fact that mines were not rateable excepting those that were open to the air of heaven; and that woods were not rateable excepting underwoods. He did feel most strongly that it was incumbent upon persons interested in the occupation, and perhaps in the possession of real property, to call upon the Legislature to place an equitable portion of the burden of the relief of the poverty of the country upon other than real property (Hear, hear). Let him now ask the Club to take a retrospective view of their position as ratepayers during the last thirty years. Thirty years ago the union houses were introduced, and the present Poor-law system established. At that time they knew nothing of registration fees for births, deaths, and marriages; nothing of vaccination fees; nothing of registration fees for legislative purposes; nothing of lunatic asylums, and very many other impositions that had since fallen with great rapidity upon owners of real property. Nothing was then known of the establishment of the new police, and they knew nothing then of making the police gamekeepers (cheers). They knew nothing then of the rivers, and many other little matters that they were well acquainted with now. But the English farmer had been patted upon the shoulder, and told to take it all gently like a good fellow; and he had been assured that the alterations were very small, and simple additions that would not affect him much. The consequence was that by these dribblets the local taxation had been increasing in such a manner that the time had now come when the English farmer should kick over the traces, and express his opinion upon the enormous impositions that had been heaped upon him, particularly now that there was a chance of the turnpike roads being added to the other burdens. Those turnpike roads in themselves would, beyond any question, double the road-rate throughout the kingdom. Then there was the education rate, which Mr. Fraser, at the meeting of the Central Chamber of Agriculture, said was only a simple proposition to pay 2d. in the pound for the education of the agricultural labourer; but at the same time it was for the education of thousands of other children who would be included in the account, and the proportion which the occupier of the soil paid to that of the manufacturer or artisan was much in favour of the latter.

Mr. HOWARD thought the speaker was travelling rather into the region of prospective rating, the subject before the Club being rating as it was at present.

The CHAIRMAN said it was really very hard to know where to draw the line.

Mr. DUCKHAM begged to apologise if he had wandered away from the subject, but his object had been to show that

there had been such an accumulation of impositions in their rating that they were quite warranted in calling upon the Legislature to revise the present system, and endeavour to adopt some more equitable arrangement for the future (cheers).

Mr. A. CROSKILL (Beverley) said there was one observation he wished to make at the outset. It was an observation very often made after the reading of papers at that Club; but it had not been made so often on that occasion as it merited. The observation had reference to the paper that opened the discussion (Hear, hear); and he could not but say that Sir George Jenkinson was entitled to great credit, as well as thanks from the Club, for the manner in which he had brought the subject before the members. This was the second time he had had the pleasure of hearing Sir George read papers at the Club; and they had both been marked with a most thorough knowledge of the subject, and showed in themselves that he had spent a great deal of time and pains upon them. The result had been that the compositions were well worthy of the Society; and, as far as he was concerned as a single member, he begged to tender his sincere thanks to Sir George for the able way in which the present subject had been treated. If, therefore, in the few remarks he intended to make, he had to dissent from the conclusion of the paper, or to criticize greatly one or two statements, it would not be thought he intended to attack the author personally or in any offensive manner (Hear, hear). In the first place, it seemed to him that the question as to the rating of iron-works, railways, and telegraphs had been somewhat misunderstood. He had understood Sir George to say they were not rated at all; but he had since explained that what he said was, that they were not rated according to the income they produced, but only according to a certain value, far below what they should have been, as compared with agricultural property. That certainly was a mistake, and should not go forth uncontradicted. As to the justice of dealing with funded and other property—chiefly funded property—Sir George had most pointedly made a difference between a large amount of money invested in the funds and a large amount invested in land; and he said it was a great injustice that the large amount invested in land should be charged with local rates, while an equal amount in the funds should not contribute to them. Although it was said there was an injustice, he (Mr. Croskill) failed to see the slightest argument to show where it was; and it did occur to him that the terms on which the money was borrowed from the fundholder and lent to the State, according to the Act of Parliament by which the funds were created, were, at least by implication, that it was not to be taxed for local purposes. That was an argument against the question of rating funded property; and it was not so clear a case as it appeared at the first sight, when the bare fact was stated—that land was rated, and funds were not. When an inquiry took place before an impartial committee, it would be found there was a good deal to be said on the other side. Not so much in the opening paper, perhaps, but in the remarks of subsequent speakers, the present state of local rating had been treated of as an oppression of the landed interest, and as a thing which ought to be repealed, because the landowners were suffering a great injustice. One could, indeed, hardly believe this to be the fact. It required a little more evidence to comprehend it, when one considered, without reference to politics, the general composition of the Legislature of this country. When we remember that there was one House of Parliament consisting almost entirely of landowners, and that the Lower House consisted to a great extent of persons who were owners of real property mainly contributing to these rates being dis-

cussed before the Club, it could hardly be believed that in all these years there had been such a great injustice still unredressed, with the landed interest so largely preponderated amongst the members of both Houses. He fancied when the matter came to be more discussed it would be discovered that there was not such a great injustice after all, else the Legislature, which was omnipotent, would, depend upon it, long ago have relieved themselves from evils of which they were the chief sufferers (laughter and cheers.) This matter was very properly brought before the Farmers' Club, but he very much doubted whether it was so much a farmer's question as had been made out, for if the rates were all removed to-morrow, would not the rents be proportionately increased? (Hear, hear.) He would just put it to the farmer's present whether it was not a question for the owners rather than the occupiers of the land, because if the rates were shifted off the latter they would not get land any cheaper? The remedy proposed in the paper was a sweeping one. The repeal of local taxation bodily was a very sweeping thing indeed. It certainly did show the march of advancement, and that we were all going on at a rapid speed (laughter.) When a gentleman like Sir George Jenkinson proposed total repeal, the proposal had a very strange sound (laughter.) But practically there was more than one objection to paying off the local rates out of the general taxation of the country, and increasing that by doubling the income-tax or adding either sixpence or fourpence in the pound. In the first place, although the amount of local rates at present might perhaps be covered by 6d. in the pound income-tax, it must occur to all that if they were once to put it into the national expenditure a great deal more than that would be required. Then as to the local control. If the whole of the local rates were taken out of one general fund, we should find the control exercised at present, either by the guardians of the poor or by the magistrates, a very complicated matter. By the way, as to the estimate formed by Sir George Jenkinson of the county magistrates. There was a strong clause in his paper as to the wisdom and industry of the local magistracy (laughter.) Not being one of them he might be able to speak with some impartiality, and he must say he sincerely hoped they deserved the high commendations passed upon them; but it was a great, and no doubt unfortunate fact, that, as a rule, they did not receive those commendations, and were not so generally appreciated as they assuredly ought to be, according to the estimate formed of their capabilities (laughter.) The sweeping statement had been made, too, that manufactories and places like that of the Messrs. Howard were not assessed to local taxation at all. That was modified afterwards, and it was said they were only rated according to the agricultural value of the acres. Indeed he (Mr. Croskill) was directly appealed to, by his friend Mr. Williams, and in reply to the question asked, he (Mr. Croskill) would say that whenever he built a shop, or enlarged his manufactory in the slightest degree, the rating was proportionally increased, and it was a great mistake ever to suppose that places engaged in manufacturing pursuits were not rated in the same way as farms were (Hear, hear).

Mr. J. HOWARD (Britannia Works, Bedford) said they were all aware that the influence of the discussions that took place at their club meetings was not confined to the members, but their doings were often quoted by members of both houses of the Legislature. Hence it was very important that what was said there should be reliable. From Sir George Jenkinson's statement, it appears there is certain property in this country exempt from local taxation—such as iron mines, copper mines, and tin mines. He (Mr. Howard) accepted that statement as perfectly correct:

and it only showed them how fast asleep they had been as agriculturists to allow things to remain in such a state for so many years, and it showed the great necessity there was of looking more closely into the whole question of taxation. The club ought, therefore, to be extremely obliged to Sir George Jenkinson for the trouble he had taken to collect and arrange such an amount of valuable information. The question of the relative ratings of manufactories and farms had been raised, and if he (Mr. Howard) understood the matter aright, his friend Mr. Williams understood it all wrong (laughter). His (Mr. Howard's) farms were taxed for the support of the poor and other local charges exactly upon the same principle as were his manufactories. The manufactories were taxed upon this principle—"What would they reasonably let for?" And the farms were taxed upon precisely the same rule (Hear, hear). Therefore, in his opinion, agriculture had nothing to complain of upon this score. He remembered a demagogue some years ago laying down the doctrine that the workmen in an establishment had a fair claim to share in its profits. He was at the meeting, and after the demagogue had spoken, he got up and said: "I will put a point to you. Two sons are started in business—one in Birmingham, the other in Manchester; the latter by his skill and industry amasses a considerable amount of money, the other loses his all. If the workmen of the one brother are to share in his gains, are those of the other to partake in his losses" (laughter). And if we had no income-tax in this country, he could very well understand Mr. Williams's position, that property should be rated according to the income derivable from it; but to say that a man was to pay upon the income gained by his manufactory was altogether beside the question. He had only further to say, that if the farmers of England, through their Clubs and Chambers of Agriculture, would pay more attention to this question of local taxation, some relief would soon be obtained (cheers).

Mr. C. CADLE (Gloucester) said he would endeavour to mention one or two points in which the present system of rating was very unjust to land. In the case of shipping, for instance, boys were raised in the country, and when they got to a size at which they could go to work, some inducement or other caused them to go on board a ship. They spent the best of their days at sea, and when they came home if destitute had to be supported by the parish, and it could not be denied that the burden fell more upon the land than upon any other class of property. Then in the case of a manufactory: in prosperous times, when every thing was going on well, the manufacturer got a lot of hands by offering them high wages, which he could very well afford to pay. This employer, however, was only rated for the bare walls of his manufactory and the land upon which it stood, and thus his ratable where hundreds of hands were employed would probably not be equal to that of a farm where only a few were employed. By-and-bye the factory is wholly or partially closed, and the hands thrown upon the rates in large numbers. There is no other country where a similar system of rating is carried out. I believe in America all property pays to the relief of the poor, and even in Scotland and Ireland a different system to ours is adopted. I mentioned just now that the burden fell more heavily upon land than upon other property, and to illustrate this I will take the case of allowances adopted in most unions—20 to 25 per cent. being often allowed off the gross estimated rental of houses, &c., while 2½ and at the utmost 5 per cent. is all that is allowed off land only; this is unfair now we have Union rating, but it did not matter so much when town parishes supported their own poor and country parishes theirs. When a house is void no rates are paid for it, and if you take a

number of houses the repairs will not average more than 10 per cent.

Mr. J. REEVES (Upscombe, Stockbridge) thought the discussion had become very wide. One point lost sight of was that in the time of Elizabeth the poor-rates were formed for the maintenance of the poor, destitute, and blind. Since then there had been the county and police rates put upon them, and new gaols and asylums had been built—things never contemplated in the time of Queen Elizabeth. And why should they protect the gentlemen around them? A policeman could always be found near a gentleman's gate (loud laughter). That gentleman contributed to the rates for his house and the few acres he cultivated; he let the chief part of his estates to his tenants, and they paid for this policeman (renewed laughter). And now Earl Devon was about to bring in a bill for infirmaries to the workhouses, which would be an additional expense to the ratepayer. The Union to which he belonged was building at the present time an infirmary, and they would all have to do it wherever they lived, and be compelled all over the country to have hospitals and infirmaries in connection with every one of the workhouses. When all this is done, ought not the income of the property to unite to pay for it? People might say what they liked, but the only way to do it was by a property and income tax. He hoped the discussion would not end in that room, but would result in a deputation to the Chancellor of the Exchequer (cheers). What was the use of their coming there, perhaps twice a year, discussing a subject, and then letting it drop? If they were a band of farmers united together in this Club, let them go to the fountain head and have a remedy (cheers).

Mr. MASTEN (Pendeford, Wolverhampton) thought that the agricultural area of the gentleman who followed Sir George Jenkinson was rather limited. They all knew that the Club was not composed of agriculturists alone, but included gentlemen in trade and manufacture. He considered, however, that a man who was really a farmer should farm from 100 to 1,000 acres, and occupy his farm for the sustenance of himself and family. That man was a farmer, and he was in a better position to judge of the way in which the agricultural community were treated by the Legislature than any mere fancy man who farmed for amusement, and looked upon his farm as a kind of plaything. He did not know whether Mr. TRASK's farm was a plaything to him, but probably his occupation was not one of a few hundred acres for the maintenance of himself and family.

Mr. TRASK begged to say he looked entirely to his farm for support, and the views he had enunciated at the earlier part of the evening were based upon a question of justice only.

Mr. MASTEN said at these Club meetings there were generally three classes of persons. Some expressed very impartial opinions as to what they thought most desirable; others (present company always of course excepted) entertained most contracted views of everything, and others talked about things of which they knew absolutely nothing (laughter). Now it was well known that the agricultural community were so much aware of the burdens pressing upon them, that they were determined to put their shoulder to the wheel and try and remove it. As regarded the exemptions of iron, copper, shipping, tin, and lead, it ought to be borne in mind that there was additional pressure, because the men engaged in those transactions were engaged in a peculiarly hazardous work, and became prematurely old much sooner than men working in agriculture. There is a great difference in the number of hands employed by a farmer rated at £1,000 per annum and a manufacturer rated at a similar sum. The amount of pau-

perium at some particular times when trade is bad is much greater in the case of the latter than the former, farmers employing men at moderate wages all the year round, and manufacturers at a much higher rate, but discharging them at a very short notice when there is no further work for them. Too often, I fear, the parish is the only alternative they have to fly to. As to the rating of timber, he heard Mr. Stanton read his paper at the Midland Farmers' Club, and he stated that the rating of timber and game would be so small as compared with the broad area of general rating, that they would form but a really infinitesimal item. It would be in fact striking not at the trunk, but at one of the small branches. They were all indebted to Sir George Jenkinson for his valuable paper, and as it offered so wide a margin, it was not to be wondered at that the discussion had drifted a little (cheers).

Mr. S. SIDNEY (The Agricultural Hall, Islington) said that with every deference to the institution, it was to be regretted that they did not, like the Society of Arts, print the papers before they were read, so that those who took an interest in the subjects they treated might be prepared, for it was almost impossible, of course, to follow a statistical paper like that which they had been considering, so as to produce the best practical results. Nothing could be easier in the Farmers' Club, because they had peculiar facilities for printing. Turning to the question before the Club, he thought it was no argument at all to say that such and such a thing was enacted in the time of Elizabeth, because since that time the state of society and of trade had completely changed, while industries had arisen and incomes been acquired of which no possible idea could have been formed in those days, although he would venture to say that the principle established in the reign of Elizabeth had saved this country from disasters and revolutions which had fallen upon almost every other state in Europe. But if any gentleman, particularly any gentleman connected with the agricultural party, who for fifty years had had predominant power in this country, thought there was any property which was not properly rated, surely there was nothing more easy than to bring the matter before Parliament. If it were proper that woods, game, and mining property should be rated, let the matter be brought before a committee; and from what we had seen in the past, if it were in the interests of the agricultural party, that property would soon be subjected to a rate. The farmers could not forget that it was not so many sessions since that the agricultural interest, in the teeth of the whole middle-classes of the country, carried a bill for making policemen gamekeepers, and after the passing of that bill the agricultural power could bring on any bill it pleased. It was very true, as had been said, that mining property employed a vast number of persons who, when the mines failed, fell back upon the general rates; but let him ask any gentleman who lived in a peculiarly agricultural district whether he would not be much rejoiced if he were told that a flourishing mine was opened in his district? A mine was a customer to the agricultural district. It raised the wages to be sure, but it gave a ready market for everything that the farmer produced, and nothing was more lamentable than to observe the attempts that were made by insinuations from time to time to separate the interests between town and country, between manufacture and agriculture.

The CHAIRMAN: Do you mean those observations to apply to the discussions of the Farmers' Clubs?

Mr. SIDNEY said he did.

The CHAIRMAN: Then I think you are wrong. I never heard anything of the kind.

Mr. SIDNEY, continuing, said he wished to impress upon his agricultural friends that towns and manufactories were the

consumers and purchasers of the farmers' produce, and that there was no opposition between the two interests. The taxing of funded property for the support of the poor would inevitably lead us, if the movement were successful, to a national rate for the support of the poor. Whether that was right or wrong he would not pretend to say at the present moment, but he wished to point out, that if we came to national taxation we should come also to national management. The great merit of poor-law management at present was, that the control was local and not in the hands of the Imperial Government. Should the change occur, we must be prepared to give up this advantage and become mere ciphers. It was a question perhaps whether some charges should not be put upon a general fund; but when any one talked of taxing the funded property the subject could not have been gravely considered. The quotations in the market that morning were: English 3 per cents. £93 10s., and American 5 per cents. £70. What was the cause of this difference? America was a rich country, with unbounded resources; but there was uncertainty, that prevented the confidence there was in this country. England could borrow cheaper than any other country in the world, because there was great confidence. One of the greatest arguments in connection with this question of funded property was the paramount necessity there was to do nothing that would shake this confidence. He confessed he was one of those who questioned the propriety of imposing income-tax upon funded property, but it had been done; and now were we going to destroy credit by proposing an unlimited taxation for the purpose of relieving some portion of the country of pressing local taxation? The question had been discussed by several gentlemen as if the agricultural community alone bore the weight of poor-law taxation; but that was not the case. The greatest amount of poor law taxation was borne by towns. He himself paid £80 taxation a-year for less than an acre of ground, and he had just been told that the Hotel in which they were meeting paid £450 rates. He made these observations to show that the inevitable necessity of the country, which compelled us to make a provision so that no revolutionary elements shall be incited, had compelled us to raise these taxes in the most convenient manner. He suggested to his friend Mr. Williams, who he always thought was a model of piety and patriotism (laughter), that he had evidently been dipping into the pages of Mr. Tom Paine, who thought it was an improper thing that one man should have more than one thousand a-year; else why would he have made so much of the fact that Mr. Morrison had saved so much money by keeping a shop before he purchased landed property? (laughter.) When we looked fairly into the whole matter we should find that our interests were the same, and that the greatest interests we had were to preserve the credit of the country, and he trusted no attempt would be made by that most loyal body of Englishmen, the agriculturists, to destroy our credit by taxing funded property to an unlimited extent (cheers).

Mr. C. S. READ, M.P. (who had a little before entered the room, amidst general cheering), said he rose, not for the purpose of prolonging the discussion, but to offer to the meeting his apologies for being absent from the chair; but, as they knew, business in another place, to which he need not further refer, had denied him the pleasure. This was a very important subject—more extensive than any that had been discussed before, this year, and one that might be considered thoroughly popular at the present time. He would not go into the general subject, but would reply to a few remarks he had heard from his friend Mr. Sidney. He seemed to think that whatever the agriculturists liked they could do in the House of Commons. Since he had had the honour of a seat

there, his experience had, however, led him to an exactly opposite opinion, and anyone who had marked the slow progress of the Foreign Cattle Bill might see that things were not passed so easily in that assembly as was imagined. The next observation was as to the delight Mr. Sidney described that would be exhibited by the agricultural community should a mine be introduced into the middle of an agricultural district. It would be a very good thing, no doubt; but they would be equally pleased if they saw rising around them a populous and thriving town. Whereas a mine would contribute nothing to the rates, would employ an immense number of labourers, would deteriorate their health, and now and then blow a few of them into eternity (laughter), every stick and stone of a town would pay a certain proportion of rates. Therefore there was no analogy between the two, except that whereas one paid the rates and took care of and sheltered the poor, the other wore up and injured the poor, and paid no rates at all. Then, it had been said, if we by any means put the almightiest burden upon the fundholders we injured the national credit. Why, ever since his short experience of public life, he could remember that the Funds had altered they had been charged with Property Tax—they had altered from 4 to 8½ per cent., and a further reduction, perhaps, might be threatened without calling the national credit into question; and why they should not further contribute to the maintenance of the poor, as well as to any other exigencies of the State, he was at a loss to imagine (cheers).

Mr. W. EVZ (City) said he believed the origin of exempting timber from rating was to encourage ship-building; but inasmuch as ship-building was no longer promoted by the oak of Old England, but rather by the iron taken out of the mines, that might very well come out of the list; and an indirect effect of rating timber would be that as soon as landlords found their woods rated, a great many of them would be stocked up, and the land would be brought into cultivation, not only producing food for the country, but benefiting the adjoining land. With regard to game, when let, it could be rated, and he should be sorry to see game put down to any great extent (cheers).

Mr. JASPER MORE, M.P., said that, with regard to the proposition to rate woods and mines, it must be remembered that Mr. Wyndham had brought the subject forward every session, and had shown himself to be quite powerless to effect legislation in the matter. The object of such a meeting as this should be to induce the Government to take the matter up, because these desirable changes, he was convinced, would never be brought about unless

they were made Government measures. It was said by one speaker, that if the agriculturists were sufficiently interested in any question, they had the power of carrying it through the House as they did the Game Bill. Every one knew it was not the agricultural interest that carried that bill. All who represented county interests were well aware that the landed interest and the agricultural interest were two different things. It was all very well to say at agricultural dinners that the interests of landlords and tenants were identical; but he did not believe it for a moment (laughter and cheers). When the two interests in the House of Commons pulled together, they could carry everything before them, as in the Cattle Plague Bill; but when a purely agricultural question came before the House, his experience, as well as that of his hon. friend Mr. Read, was that they had no power at present to do anything more than appear in a respectable minority on a division. The difficulty as to the question of rating funded property was how to rate the man who had got it. It had been held in a dozen cases that had been brought before the superior courts, that the rating of inhabitants gave the power of rating funded personal property, if you could get at it. The inherent difficulty was how to fix the residence of a man who had money in the funds, so as to make him amenable to the rate (Hear, hear).

Mr. WHALLEY, M.P., said he had never heard a speech that contained more sound sense or more sound political economy than that of Mr. Sidney. The proposal that the funds should be taxed was a proposal he had never heard seriously entertained in the House of Commons, and the effect had very properly been described by the gentleman who said our national security and confidence would suffer.

The CHAIRMAN said he thought it was not on record that a meeting of the Farmers' Club had been prolonged like this, and it showed the importance of the subject. It was now time the discussion was brought to a close. The Club was very much indebted to Sir George Jenkinson for the valuable paper he had read, and their thanks would be intensified when they had the opportunity of reading it deliberately in print. If, in addition to the carefully-prepared facts it contained, they remembered Mr. Traak's suggestion as to an inquiry, much good would follow the meeting (cheers).

Sir GEORGE JENKINSON replied on the whole; and after cordial votes of thanks had been given to him, on the proposition of Mr. Howard, seconded by Mr. Crosskill, and to the Chairman on the proposition of Mr. Traak, seconded by Mr. Read, M.P., the meeting terminated.

CENTRAL CHAMBER OF AGRICULTURE.

A general council meeting of the Central Chamber of Agriculture was held on Tuesday, May 5, at the Salisbury Hotel. The chair was taken by Mr. Jasper More, M.P., the President for the year. Delegates were present from a number of local chambers.

The minutes of the last meeting having been read and confirmed, it was resolved that a general meeting of the members of the Chamber should be held at Leicester, for the purposes of discussion, on the Friday evening during the Royal Agricultural Society's show at that place.

A petition to the House of Commons, founded on the resolution of the last Council meeting, expressing the satisfaction of the Chamber at the regulations with regard to the cattle and sheep diseases now in force in Ireland, and praying that similar regulations should be enforced by statutory enactment

throughout the whole kingdom, was read by the Chairman and adopted.

Mr. HODSOLL (Kent) moved the following resolution: "This Chamber records its gratification that the importance of establishing County Financial Boards is now acknowledged in Parliament, and expresses its reliance on the Government carrying out their declared intention of making the inquiry into the whole subject speedily effective for legislation." He remarked that the time had arrived when the value of county financial boards was universally recognised. The increase of expenditure from the county rates had of late years been so considerable that it had become absolutely necessary that those who paid the rates should be allowed to take part in the disposition of the funds. In his opinion, representation ought to be co-existent with taxation; and, seeing the

growth of asylums, gaols, union houses, and other charges upon the county rates, he thought the agricultural interest were bound to insist that the ratepayers should be represented by a fair proportion of gentlemen outside the circle of the magistracy.

Mr. BOWEN seconded the resolution upon the simple constitutional principle that representation should accompany taxation, and not, as he explained, from any feeling of antagonism to the magistrates. About the desirability of establishing county financial boards there were not two opinions among agriculturists, and his only astonishment was that the present anomalous system of administration should have existed so long. In cities and boroughs municipal councils were elected by the burgesses. These bodies imposed the local taxes and spent the money; and if that principle had answered well, as it had done, in those places, surely it would work equally satisfactorily in the rural districts.

Sir M. WELLS said that the position of the question, so far as the House of Commons was concerned, was most unsatisfactory. He had had some experience of Parliamentary proceedings; but this was the first time that he had ever known a Bill treated as that of Mr. Wyld's had been by the House of Commons, when the principle of the measure was so generally approved of as this was, alike by the country at large as represented by the chambers of agriculture and by the House itself. When that Bill came before the House, he was extremely surprised at learning from an hon. member, a friend of his, who voted in the minority, that the large majority of members representing the agricultural constituencies had not voted for the second reading. The principle having been affirmed, he considered that the decisions to which the House had arrived to negative the Bill and refer the general questions to a Select Committee was tantamount to shelving the whole matter. Mr. Read, who took part in the debate, expressed himself strongly in the sense in which he (Sir M. Wells) was speaking—namely, that there was no question of principle at issue, for that was generally approved, and in the House of Commons itself there was hardly any dissent to the principle of the Bill; nevertheless, strange to say, the Bill was not sent to a Select Committee, where, by cutting out the permissive clause, reducing it in other respects, and making it more simple, it might have been converted into a good measure. But, instead of this, what took place? A member of the Government rose and dissented from the principle of the measure from end to end of his speech. He objected to its clauses. He opposed going into committee of the whole House upon it, and even to sending it to a Select Committee. It was then proposed by another member of the Government that the whole question should be considered. But what question? The general question had been determined by the country, and the House of Commons knew it. The House was not asked to consider whether there should be Financial Boards for the country, though its various chambers of agriculture had unanimously declared that it must be represented in reference to the county expenditure. Yet, forsooth, the members of the House of Commons gave it up altogether, voted against the second reading of the bill, and supported the Government in the proposal to appoint a Select Committee to consider the general question. When that committee would be appointed, however, it was impossible to say; and he owned that he was greatly startled when he found members of the Chamber following members of the Government into the lobby on this subject after they had declined to bring in a bill. The question had passed from the hands of the independent members of the House of Commons who represented these chambers, and was now in the hands of the Government; and it was for the Government to say whether legislation was to be undertaken with their consent. So far as Mr. Wyld's bill was concerned he did not approve of it. In his opinion it was a cumbersome and remarkable scheme; but had it been sent to a Select Committee of any intelligence, it might have been returned in a form that would be acceptable to the House. It might then have become law in the present session, and the result would have imparted much satisfaction to the country at large. Under present circumstances he only spoke the sentiments of all the chambers and of the farmers at large when he said that the question had not been fairly treated in the House of Commons, and that members who were of opinion that the principle of the measure was a good one ought not to have been led away by the promise of the Govern-

ment to appoint a Select Committee to inquire into the general question.

Mr. BROMLEY DAVENPORT, M.P., as an independent member of the House of Commons, and representing a large agricultural constituency, repudiated altogether the observations contained in the speech just delivered. It was quite clear that the hon. gentleman did not understand the issue upon which the House of Commons went to a division, and, that being so, he ought not to have expressed himself in such strong terms. The fact was, as was tersely remarked to him by Mr. Healy, that had the bill been sent to a Select Committee, the first work of the committee would have been for one of its members to move that all the words after the word "that" should be omitted from the bill. The principle of the measure had been thoroughly affirmed by the House, but it was the opinion of those who understood the matter best that it was impossible for a Select Committee to deal satisfactorily with such a bill. It was considered less a shelving of the subject to refer the general question to a committee than to refer the bill to a committee, and to that extent the majority of the House was prepared to go. The division was only taken because an eccentric member of the House came in late, and made a great row, and without his having listened to the discussion: it was his single dissentient voice that forced the division. In short, had it not been for Mr. Sergeant Gascolee, there would have been no division at all. He thought, then, it was a great reflection on the common sense of the House to take such a view as that enunciated by Sir Mordaunt Wells. Had he entertained the least idea that the result of his vote would be to shelve the question, he would certainly have gone out with Mr. Wyld, who, however, had reluctantly voted for his own bill on the occasion. Indeed, he believed the hon. member for Bodmin declined to act as teller on the occasion. At all events, Mr. Sergeant Gascolee took his place; and he (Mr. Bromley Davenport) told Mr. Read that if he were prepared to vote with Mr. Wyld he would do it also. But he felt sure, from the manner in which the division was taken, that they would have been wrong in voting against Ministers, and that the course the Government recommended was the wisest and best to pursue.

Mr. E. HENRAGE, M.P., having presided at a large meeting of the Lincolnshire Chamber on this subject a week ago, wished to read the resolution which was then adopted. The original motion was: "That this Chamber, considering the present system of administering the county expenditure solely by the magistrates, without any direct representation of the ratepayers, to be an anomaly and injustice which ought not to exist (the public money being provided by taxation or rating), is of opinion that those who pay the money ought in all fairness and equity to have a voice in the control of the expenditure; and that, to accomplish this, County Financial Boards should be established, which should possess combined powers with the magistrates in the expenditure of all money raised for county purposes, and that the ratepayers should have full opportunities of giving expression to their views." In the course of the conversation that ensued, it was clear that the general opinion of the Chamber was, that it was of no use to discuss Mr. Wyld's bill, that it had better be withdrawn, and that a measure initiated by the Central Chamber should be introduced next session. It was thought that Mr. Wyld's bill was far too long, and that it was more of a general interference bill than a financial board bill. Its permissive character, too, was considered to be much against it, and under several of its clauses the new boards must be brought into collision with the magistrates instead of into union with them. Accordingly the resolution was withdrawn, and another carried unanimously, which showed that it was not the opinion of everybody in the county that Mr. Wyld's bill should have gone to a select committee. That resolution ran in these words: "That whilst admitting the necessity for County Financial Boards, this Chamber believes that the present bill before Parliament needs great alteration, and they would therefore recommend it to be withdrawn; and that the Central Chamber do take up the subject, and, with the assistance of the county Chambers, prepare a bill for the next session of Parliament" (Hear, hear).

Mr. WYLD, M.P., observed that his bill was founded upon the recommendations of a select committee of the House of Commons. The introduction of the permissive clause, though partly his own doing, was based upon a conversation which he

once had with the late Lord Palmerston on the subject of establishing County Financial Boards. It was the opinion of Lord Palmerston that any bill brought into Parliament ought to be permissive and not compulsory; and he believed that the machinery of his bill would have effected everything the ratepayers required. There were several counties in England where the ratepayers were content with the present system of administering the county funds. Considerable difficulty, therefore, was likely to be found in carrying through the House of Commons any measure compelling the establishment in such counties of Boards entirely elected by the ratepayers. The division on his Bill in the House of Commons was taken upon a false issue, and he complained that the Government had not behaved in a friendly, straightforward manner towards him. For he had no doubt, if the measure had been referred to a Select Committee, although it had faults of detail, it might have been so modified as to meet the requirements of the ratepayers. Seeing that, as the Bill did not give satisfaction to the House, and as the Government proposed a substantive resolution, he would have great difficulty, even if he obtained the second reading, in carrying it through Committee, he consented, almost under duress, to accept that resolve. He had since asked the right hon. gentleman to tell him frankly whether he was prepared to give a Committee to investigate the subject, and he said he was; and the right hon. gentleman had now sent him a list of the proposed committee, so that action would be taken immediately (Hear, hear). As the Committee would not occupy more than two or three weeks in taking evidence and reporting to the House, he looked forward to preliminary action this Session, and he hoped it would end with a measure of compromise that would be satisfactory to all parties (cheers). He felt assured, then, that although there might be a little delay, the subject was placed on such a footing that whatever party might be in power they must take it up, and, supported by the suggestions of the Chambers of Agriculture and intelligent ratepayers throughout the country, he trusted to introduce a Bill next Session that would do justice alike to the magistrate and the ratepayer (Hear, hear).

Mr. READ, M.P., had ventured, in the House of Commons, to express on the part of the tenant-farmers their thanks to the hon member for Bodmin for bringing in his Bill, and he was obliged to the Government for undertaking that difficult and onerous task (Hear, hear). He must be permitted, however, on the present occasion to make one or two adverse comments on the Bill. In the first place, he must say that he objected entirely to permissive legislation, because it went to ignore the very principle on which the Bill was founded. For, however well affairs might be administered in certain districts, and however badly they might be administered in others, still, if they allowed the Bill to be permissive, they struck at once at the root and principle of the Bill, which was, that representation and taxation should go together. In fact, he owned that he was so ignorant upon the subject that he really objected to the formation of these county financial boards. His idea was simply this, that it should be the duty of every county to send a certain number of ratepayers to the Court of Quarter Sessions, there to assist the magistrates in the financial business of the county. Instead then of agreeing with Sir Mordaunt Wells that the House of Commons did wrong in wishing to have the general subject investigated by a Select Committee without being encumbered with this bill of 139 clauses, he thought they had exercised a salutary and a wise discretion. The hon. gentleman seemed to think that legislation was to take place on the subject in the present session; but everybody knew that there would be no legislation upon any subject whatever this session. Nay, more, although the desirableness of applying the principle of representation in the administration of county finance was generally admitted throughout the country, he ventured to say that if they got together twenty representatives from different chambers, and asked them how they would apply the principle by some practical suggestions, there would be the greatest diversity of opinion respecting it (Hear, hear.) Opinion was unanimous on one principle; but the way in which to work it out had not received that consideration and that general consent which as so necessary before the time was ripe for legislation. Even the principle were adopted he did not think any great saving would be effected. One gentleman had referred to municipal

corporations, and left it to be inferred that town councils elected by the ratepaying inhabitants managed affairs better than the magistrates in the county. He (Mr. Read), totally disagreed with that, and believed that the expenditure of the county magistrates would, in nine cases out of ten, contrast favourably with the expenditure in cities and boroughs (Cries of "No.") Mr. BOWEN intimating that he did not say that the affairs of the cities and boroughs were better carried on than those of counties). Altogether some members of the Chamber appeared to think that the country members in the House of Commons had betrayed the trust reposed in them by their constituents; still he hoped that the majority of the Council would concur in the resolution, and be of opinion that the House had acted wisely in sending the whole subject to be inquired into and speedily reported upon by a Select Committee (Hear, hear).

The Earl of LICHFIELD, whilst agreeing in principle with Mr. Wyld's bill, saw many objections to it in the details. His reason for concurring in the principle was that there was an anomaly in the present state of things that ought to be corrected. But whether it was right or not at once to throw the entire control over the expenditure of the county into the hands of the occupiers was altogether another question. It was all very well to talk about taxation and representation going together. That was quite right; but it was necessary first to consider carefully on whom that taxation falls. He was willing to admit that under the existing system the occupiers paid the whole of the rate, and that when there was an increase of the rate caused by an additional expenditure on the part of the county magistrates, the increased rate undoubtedly fell upon the occupier. For they knew perfectly well that it was under very exceptional circumstances, indeed even where the tenancy was from year to year, that any alteration was made in the rent of a farm consequent upon any change in the circumstances under which it had been let (Hear, hear). Practically then there was no question that any increase of expenditure on the part of the magistrates did fall upon the occupier; but they must remember what was equally certain that, if he had a farm to let at that moment, every penny that was likely to be charged in the way of rate upon it would have to be taken into consideration before he obtained his rent for it (Hear, hear). In that way then the charge fell upon the owner (Hear, hear). This gave rise to the question whether the system under which the rates fell upon the occupier was right or not. It appeared to him that it was not right, because the two positions could not be reconciled. As the matter stood, it was an anomaly. On the other hand, if the control of the expenditure rested on the occupier it would be equally an anomaly, so far as the land was concerned. In Scotland the expenditure was controlled by a body of persons, all of whom were owners of property in the county. It was not a representation of the ratepayers; but every person who was the owner of property subject to rating of the value of £100 a year was, as a matter of course, placed upon the Board which had the management of the expenditure. There seemed to be something more reasonable in such a system as that then in the scheme of Mr. Wyld, or in throwing the control of the finances wholly into the hands of the occupiers, or wholly into the hands of the magistrates. He had listened with some regret to the observations of Sir Mordaunt Wells, because he did not think that it would assist in adding to the influence of the Chambers if it were to get abroad that they laid down, as the hon. gentleman seemed to do, that the House of Commons really had no business to do more, on a question like this, than to record the decisions of the Chambers of Agriculture. With reference to municipal corporations, the state of things in cities and boroughs was totally different from what it was in counties. The expenditure under the control of the county magistrates was all directed by various Acts of Parliament; whereas the expenditure carried on in many of the boroughs was altogether voluntary—for improvements in the town, for public libraries, and fifty other things, which were in no way a necessity, but for which Parliament had allowed rates to be levied. For purposes of that description it would, of course, be extremely unreasonable if the ratepayers were not to have a full voice in the matter. There was that broad distinction to be considered; and after considering the question, and being himself favourable to the principle of Mr. Wyld's Bill, he could not help thinking, especially after hearing the hon. gentleman's remarks, that the

House of Commons had adopted the wisest course with respect to that Bill. He was certain of this, that the question had been taken up by everybody, whether owner or occupier, in such a spirit—they were all so agreed that something must be done—that in all probability a practical measure would be arrived at before long. He was not prepared to admit that by giving control to the ratepayers very much would be saved. On this point he held a strong opinion, and was inclined to think that on the whole the probabilities were that the expenditure would be rather increased than diminished. He knew well what was the sense of responsibility which was felt by the magistrates in consequence of the position which they occupied; and he was very much afraid that, supposing the control of the expenditure were given to such boards as Mr. Wyld's Bill would have created, that feeling of responsibility would cease, and he was not quite sure that the loss of that feeling would be made up by the responsibility which attached to the representatives of the ratepayers on the Board (Hear, hear).

Lord KESTEVEN, having had long experience as a chairman of Quarter Sessions, and taken an active interest in the financial concerns of the great county of Lincoln, wished to say a few words on this subject. He quite agreed in what had been stated by the noble earl, who had correctly pointed out the position in which the owner and the occupier stood in relation to the question. The noble earl had alluded to the system pursued in Scotland. There the practice was for the tenant to take the farm, usually on a nineteen years' lease, free of all payments except the rent. The local taxes were borne by the landlord, who in consequence received a net rent. The tenant, therefore, had not that immediate interest in the disposition of the county finances which the owners had. In each county there existed a board called the Commission of Supply, the members of which were owners of property of the value of £100 a year and upwards, and to this body was entrusted the management and control of the finances. The case of Scotland, therefore, was not analogous to our own. Moreover, if the rental of the land in Scotland were compared with that in England it would be found, taking into account the lesser fertility of the former, the nature of the climate, and other circumstances, that the Scotch paid higher rates than the English tenant. One material point to be kept in mind, which would show the Chamber how little control the elected members of financial boards were likely to exercise over the administration of the county funds, was the fact that about the entire expenditure in counties was regulated by Acts of Parliament. In the division of the county of Lincoln with which he was best acquainted, and in which he was chairman of Quarter Sessions, the rates were 8d. in the pound per annum—not a very heavy impost, and the produce of that tax was thus disposed of: In the first place, the rural police took just one-half of the whole amount, leaving 1½d. only to be dealt with. Of this a large portion went to the lunatic asylum, the gaols, and other public buildings, which were by no means under the control of the magistrates. True, the money for these institutions passed through their hands, and was expended by their direction; but it was under the direction of a Government officer, who reported to the Secretary of State anything that might be required in the way of accommodation, &c., and the magistrate had nothing to do but to provide what the Government inspector deemed requisite. Out of the balance remaining of the county fund, what was it that the magistrates had any control over? Simply this. A bridge wanted repair, and it might be done expensively or economically; or they might want a gaol, and build a palace or a plain simple structure for the custody of offenders. Thus the magistrates had very little room allowed them for controlling the expenditure. He should like, however, to see the ratepayers represented by a few gentlemen, if it were only that they might see how cheaply the magistrates, as a rule, at present administered affairs. He well remembered what took place twenty years ago on Mr. Milner Gibson's bill relating to this subject. It was discussed over and over again in the House of Commons, and then referred to a select committee. Two sessions the matter was considered, and the result was that Parliament came to the conclusion that the finances of the counties could not be more cheaply or better managed than they were by the magistrates. Of course it was at the same time admitted that, being expenditure without representation, it was an anomalous state of things. It was now generally conceded that the only

point which Parliament would have to consider was, the basis upon which financial boards were to be placed, what powers should be given to them, and from what source the elected members should be drawn. But, whatever was done, of this he was confident, that affairs would not be managed more cheaply than they were now, though he was quite willing to accede to the proposal that the boards should to a certain extent be elective. There was one difficulty, however, to be considered with reference to the elected members; that was, the distances they would have to travel to attend the boards, which in all probability would have to meet twelve times a year. To have to travel 20 or 30 miles for the purpose would, after the novelty of the thing had worn off, prove a great inconvenience; and, in his opinion, the only way of avoiding it would be for the counties to be divided into districts, or the thing could never be worked practically.

Mr. MEIRE drew attention to the fact that at present the county magistrates were selected from among the largest landed proprietors, and that thus a great number of intelligent men, whose property was not so considerable, but whose services would be perhaps more valuable in administering the financial affairs of a county, were excluded from the bench. It would be a great public good, and only doing justice to the class of whom he spoke, if they could be placed in a position to act in conjunction with the magistracy on this subject. Let it be understood, however, that, in saying this, he did not for one moment doubt the honour and integrity of the magistrates of England, whose character, as a whole, he believed to be unimpeachable. He hoped the Chamber of Agriculture would not be turned aside from the course they were pursuing, simply because there was a feeling that the House of Commons had treated their representations with some want of consideration. Let them persevere, and he was confident they would succeed in the end.

Colonel BRIZE said that a meeting of the Essex Chamber was held on Friday last, at which there was a strong expression of opinion in favour of the establishment of financial boards; and an amendment, approving of the course adopted by the House of Commons, was defeated by a very large majority. He believed the time had come when the principle must be admitted; and although he voted for the amendment, he did so because he had never yet seen any scheme suggested of which he could approve. The machinery of Mr. Wyld's bill was so cumbersome and intricate that, for the life of him, he could not understand it. Something more simple was wanted. If they were to have an elective body, he thought the whole should be chosen by the ratepayers, instead of one-half the board consisting of elected members and the other half of magistrates. At the Essex meeting, it was stated that there were two hundred and fifty magistrates in the whole county, but that the entire business of the county was done by thirty or forty, who devoted their attention to public affairs. If, however, any question of importance arose, the other two hundred would then come up and outvote those who had given their time and attention to the consideration of the matter. That statement had a great effect in inducing him to support the principle of financial boards.

Sir G. JENKINSON, as a magistrate, would gladly welcome the assistance of any persons, whether magistrates, owners, or occupiers, if they could relieve the pressure of the local burdens upon land. He believed, however, it would be found that practically the control of the magistrates over the finances of a county was very little; that they were in fact merely an executive body to carry out certain Acts of Parliament; that they had not the power to increase expenditure, except in some minor matters which were open to immediate correction; and that neither could they materially diminish it, for they might thereby impair the efficiency of the various establishments which they were bound to maintain. With regard to the difficulty of attending the financial board from long distances, that was a matter for the consideration of the ratepayers, and if those whom they elected did not attend, they must choose others who would attend. At any rate, by giving representation to the ratepayers, a grievance much complained of would be got rid of.

The resolution, on being put to the Chamber, was carried unanimously.

Mr. T. HORLEY, jun., proposed, "That a Committee be appointed to consider and prepare the basis of a scheme for giving to the ratepayers a share in the administration of

County Rates, and to select witnesses to give evidence before the Select Committee of the House of Commons."

Mr. J. HOWARD, in seconding the motion, referring to the comparison which had been drawn between the public expenditure in towns and counties, said he had had experience of both, having been long connected with a borough, and also a county magistrate; and he hesitated not to say that borough management compared very favourably with that of counties. This must necessarily be the case, because more time and attention was devoted to borough than to county matters. People in the boroughs were directly interested, whilst frequently in the counties the magistrates were not. In fact, it was no uncommon thing for a man to act as a magistrate who had not a foot of land in the county (Hear, hear).

Mr. B. STANHOPE, M.P., presumed that the Committee of the House of Commons would be empowered to receive evidence; and as all were agreed that if financial boards were established they ought to be as efficient as possible, he suggested that the Committee now proposed should be appointed, not to "prepare the basis of a scheme," but to watch the proceedings before the Commons' Committee, and to place such evidence before that Committee as would enable them to make a report which would form a good basis for a measure giving the ratepayers a fair share in the administration of the county rates.

Mr. WYLD, M.P., said the Select Committee would probably meet next week; he hoped, therefore, that the committee of the Chamber would take immediate action in the matter (Hear, hear).

The CHAIRMAN expressed himself favourable to the preparation of a draft bill on behalf of the Chamber. He took this ground because he had objected to referring the general question to a Select Committee. He remembered that it had once already been so referred and reported upon to the House, and that the only result was to prejudice the question and shelve it for 15 years; and he did not see any probability of a more favourable report emanating from another Select Committee.

Mr. BRANDRAM (acting upon the suggestion of Mr. B. Stanhope) moved as an amendment "That a Committee be appointed to watch the progress of the inquiry, and to select witnesses to give evidence before the Select Committee of the House of Commons."

Mr. HENKAGE, M.P., seconded the amendment, observing that to prepare a bill before hearing the evidence was to put the cart before the horse.

Lord KESTYVEN reminded the Chamber that the question at issue was connected with the subject of taxation, and that tax bills, unless they were taken up by the Government of the day, had little chance of receiving the assent of the House of Commons. After all that had been said with regard to sending the general question to a Select Committee, it appeared to him that that was the only practical way of dealing with the matter.

The CHAIRMAN was quite aware that a private member had little chance of carrying a bill of a fiscal character through the House without the aid of the Government; but his opinion was that in case the report of the Select Committee was an adverse one, and the Government did not take up the question, then, to keep the matter alive, some private member should introduce a measure on behalf of the Chambers of Agriculture.

Sir G. JENKINSON, thought the opinion of the chairman was consonant with common-sense. It was quite right that the Chamber should have a draft bill in its pocket, in the event of the question being shelved by the Select Committee.

Mr. DAVENPORT BROMLEY, M.P., on the other hand, saw little use in adopting a provisional resolution as to what the Chamber should do in case the Government did nothing. They had the pledge of the present Ministers that the subject should receive their best and fullest attention. In short, it might be said that they were pledged to bring in a Bill.

The CHAIRMAN: No. I beg your pardon; no.

Mr. D. BROMLEY: Well, it was the next thing to a pledge. Mr. Hardy said that although the Government could not undertake to bring in a Bill, they would do their best to put the question on a proper basis.

Mr. SKARBY supported the amendment, which, on being put to the vote, was carried by an overwhelming majority.

Mr. GEORGE ANDREWS (Sherborne) moved the following resolutions, proposed by the Somersetshire Chamber: "1. That the taxation now levied under the name of poor-rate, to

the extent of nearly £10,000,000 annually, bears unfairly upon income arising from real property. 2. That the exemption from the rate of income arising from personal property is unjust, and therefore requires the early and serious consideration of Parliament." Premising that these resolutions were a direct attack upon the principle of exempting from poor-rate income arising from personal property, Mr. Andrews proceeded to argue that this exemption was unjust. In its concrete form the question at issue was whether the relief of the poor was an imperial object and an imperial duty; and if, as he contended, it was both, then it followed, as a necessary sequence, that it ought to be an imperial charge. He would give them good authority for coming to this conclusion. In the year 1850 a select committee of the House of Lords was appointed to consider the question of the burdens on land. Of that committee Lord Portman was chairman, and from the noble lord's recent charge to the Grand Jury of the Quarter Sessions, over which he presided, it appeared that after thirty days' investigation the committee arrived at this conclusion: "That there is no doubt that all national property ought to contribute to the relief of the poor; and that the relief of the poor is a national object and a national duty." This conclusion, he thought, went direct to the point of the resolution now before the Chamber. But he would give them yet another authority, and it was that of a man who was justly esteemed one of our greatest and wisest. In a speech delivered in the House of Lords, Lord Brougham said, "The income raised for the relief of the poor is paid *entirely by the land*. Persons in trade only pay to the poor in as far as they are the owners of real property. Thus a manufacturer who is deriving ten or twelve thousand a year from his trade, is rated as if he only had a large building worth four or five hundred a year, besides his dwelling house; while his neighbour, who possesses a farm of the same value, pays as much; that is to say, the man who has ten thousand a-year in trade, pays no more than a man of five hundred a-year in land; yet only observe the difference between the two in relation to labour and the poor. The farmer employs a few hands, the manufacturer employs a whole colony; the farmer causes no material augmentation to the number of paupers, the manufacturer multiplies them by wholesale. The one supports, the other makes paupers—manufactures them just as certainly and in something of the same proportion as he manufactures goods." (Mr. Andrews) had endeavoured to estimate the extent of the injury which the country suffered in consequence of the exemption of personal property from a poor-rate, and these were the results. The net income assessed to the poor-rate in 1867 was taken at less than £94,000,000. The income assessed to the income-tax in 1885 was taken at £296,000,000; so that of the property assessed to the income-tax, upwards of £200,000,000 escaped the poor-rate altogether. These figures, however, did not represent the full amount of the exemption. It was estimated that the total annual income of England and Wales exceeded £600,000,000; so that if these figures came at all near the truth, income to the extent of more than £500,000,000 was exempted, whilst less than £100,000,000 paid. Many of the exempted incomes were the largest in the country, or perhaps in the world; on the other hand, many of those which paid poor-rate were the smallest. There was not a rod of productive land, there was not a cottage, or a hovel, that was not liable to the poor-rate. And the effect of the exemption was this, that it had lowered the fee-simple value of every house, and of every rod of land in the country, to the extent of one-tenth. If income were assessed to poor-rate in the same manner as it was in the income-tax, the rate would now be from 4d. to 6d. in the pound, instead of 2s. 1d., which was the average of the whole kingdom. There were towns where the union rate was 8s. in the pound, and in Warminster it was higher than that by one-third. "It was clear, then, that ten per cent. was taken away from all property coming under the head of real property. How was this tax of ten millions shared between houses and land? The proportion was shown by the following figures taken from the Tenth Report of the Commissioners of Inland Revenue, page 43. He there found that the annual value of lands and commuted tithes assessed to the income tax under schedule A, in 1864, was taken at under £54,000,000, and the annual value of house property at £85,000,000. One proposition to lower the poor rate, by widening the area of its assessment from 2s. to an average of 4d. or 6d. in the pound, would relieve the owners and occupiers

of houses by at least 1s. 6d. in the pound on an annual rental of £65,000,000, and on lands and commuted tithes on less than £54,000,000. Were they not then in a position to claim the support of the mass of the inhabitants of towns as well as the landed interest and the clergy? He believed that, when the question came to be understood in the towns, although there were men with large incomes residing in them, who would not, perhaps, consider at first that their incomes ought to be called upon to contribute towards the relief of the poor, they would at length come to the conclusion that the interests of the mass of people in town and country were pretty much the same (Hear, hear). But it was said, and Lord Lichfield had lately used the argument, that when he had a farm to let, if there had been any change in the incidence of the poor rate, advantage was taken of it in respect of the rent. That, in theory, was perfectly true; but it happened that farmers had more difficulty in changing their occupation than any other class. Once entered upon a farm, the occupier had to bear the burden of whatever increase took place in the rates; and he held that the owner and not the occupier should pay the rate. His reason was this: since the New Poor-law had come into operation, union-houses, courts of justice, lunatic asylums, and gaols had been built; and in every case where a man had been in the occupation of a farm for all that period, he had had to pay a share of the charges. The gross injustice of the present system could scarcely receive a better illustration than in the evidence given by a tenant-farmer, before a committee of the House of Lords, sitting upon this very subject of the "Burthens on Land." This witness stated that "the poor-rates on Mr. Heathcoat's factory in this parish (Tiverton) have averaged £41 0s. 9d. a-year for the last seven years; and on the farm occupied by myself, £58 2s. So that I have paid £17 1s. 3d. a-year more than Mr. Heathcoat. My rental is £300 a-year, and the profits you can imagine; Mr. Heathcoat's profits are reputed to be £40,000 a-year. Among the many hundreds of hands congregated for the production of this wealth, the sick and disabled from time to time fall back upon the parish for support. In periodical times of depression of trade, the unemployed, thrust from the doors of the very factory which has benefited by their labour, are flung back upon the land, to its serious and indefensible injury. Then there was the injustice to which the occupier was liable in respect of improvements. A man took a farm which was out of condition, and made a large outlay of capital upon it. Directly he did so, however, down came the assessment committee upon him and rated him for all his improvements. He (Mr. Andrews) was himself a member of an assessment committee, and had witnessed cases of this sort of the greatest hardship, and no one could deny that the system was a direct bar to agricultural improvement (Hear, hear). The capital which the farmer so invested was personal property. He did not intend that it should be absorbed in the permanent improvement of the estate, but he looked to its returning him a profit, and to taking it out again. In illustration of how this worked, he would mention a case that had occurred at Taunton, under the Assessment Act. At the meeting of the Taunton Assessment Committee, Mr. Musgrave, of Charlton Farm, appealed against his rating, on the ground of its being higher than his rent.

Mr. WILLIAMS, the overseer, stated that the property was worth more now than it was when Mr. Musgrave entered upon its possession, and he had rated it accordingly. Other property had been rated in the same way. Mr. Musgrave was assessed at 45s. per acre, whereas some land adjoining was assessed at 52s. per acre.

Mr. MUSGRAVE said when he took his farm it was in a miserable condition, and he had laid out a large sum upon it for improvements. No man could have made anything of the farm for the first three or four years, if he had it rent-free, provided he had put it in such a state as it was in now. He (Mr. Musgrave) thought the overseer ought to have taken into account the capital he had expended, and that until the expiration of his lease his rent ought to be taken as the value.

The CHAIRMAN: In its present improved state, would 45s. per acre be the fair value of the farm?

Mr. MUSGRAVE: I would not appeal against it.

The CHAIRMAN: Then we cannot take into consideration the capital expended upon the farm.

Mr. MUSGRAVE, sen., said that the committee had taken the rent as the basis of the valuation.

The CHAIRMAN observed that at the meeting of delegates, at Highbridge, it was resolved that the rent should be taken as the basis; but it was also agreed that where the rent was evidently below the value, the rating should be put up. The overseer's valuation was then confirmed. He had mentioned this case in order to show that the occupier had very considerable interest in the question. If personal property were rated, as he proposed that it should be, he would not have it done in the manner contemplated by the late Sir G. C. Lewis; that was, by apportioning the assessments among individual parishes, which was utterly impracticable, but by means of a national rate. Let the income rate be spread over the Kingdom, and he believed that 6d. in the pound would be all that was necessary. It was said that it would be unfair to assess personal incomes arising from trade and business; but capital invested in business was in no way different from capital invested in the funds, in mortgages, or other securities, and if the latter ought to be assessed, as many admitted, so ought the former. One argument against making the relief of the poor an imperial charge was that the local administration must in that event be abandoned. But he doubted it; for what was the constitution of a board of guardians? There were say four or six *ex officio* guardians, and others elected by the town in which the board held its sittings. The parish guardians might outnumber them; but what was the fact in carrying out administration of the union? Those who lived at a distance could not attend regularly; and the result was that the whole management was thrown into the hands of the *ex officio* guardians, the town guardians, and two or three others who lived near. Was it probable, he should like to know, that a board so constituted would give excessive relief to the poor? Or that as men of business, they would consider it desirable, because the change was an imperial one, to encourage the labourers around them to come to the board rather than go to work? For his part, he doubted if Parliament would be able to find any better mode of administration than that which now existed in the boards of guardians; and he thought it would be impossible to resist this question, if it were pressed as it ought to be in Parliament. Parliament, however, did not like to stir such questions. County members, in particular, were indisposed to doing so, whilst borough members would be persuaded by their wealthy constituents to oppose it. So that it now rested with boards of guardians, parish vestries, and the magistrates in quarter sessions, to press the matter on the attention of the Government. But even then it would be necessary for the various Chambers of Agriculture to adopt some systematic plan of action; and one of the most urgent duties of this Council was to mature without delay, and recommend some plan of county organization by which to obtain a general expression of opinion on the subject. That done, he believed that no Government could long resist the demand for justice, and that was all he asked (cheers).

In reply to the Chairman, Mr. Andrews explained that by imperial charge and a national rate he meant an income-tax.

Mr. RUSSELL seconded the resolution, and adduced examples from Redditch and Bromsgrove to illustrate the injustice which was inflicted upon occupiers by the exemption of the profits of manufacturers from liability to the poor-rate.

Sir G. JENKINSON thanked Mr. Andrews for bringing forward this important question in so conclusive a speech, and contended that an income-tax, as the simplest form of taxation, was the best means of carrying out a system of national rating for the relief of the poor. He also agreed with Mr. Andrews that the boards of guardians might with safety have the administration of the fund entrusted to their hands, and expressed a hope that the county Chambers would agitate the subject in their respective districts, and bring such pressure to bear upon whatever party might be in the Government, that legislative action would soon follow.

The resolutions were also supported by Mr. Brandram, Sir Mordaunt Wells, and Mr. Webb.

Mr. MASFEN moved, and Mr. Duckham seconded, the adjournment of the discussion to the general meeting at Leicester in July; but after some conversation, Mr. Andrews insisting upon taking the sense of the Chambers, the question was put, and his resolutions were carried unanimously.

On the motion of Sir G. Jenkinson, however, it was also resolved that the subject should be further discussed at the Leicester meeting.

The following gentlemen were, on the motion of Mr. Duckham, appointed a committee to select witnesses on County Financial Boards: Mr. B. Jasper More, M.P.; Sir Mordaunt Wells, Sir G. Jenkinson, Mr. James Howard, Mr. John Blick, Mr. J. H. Hoadsoll, and Mr. H. G. Andrews.

Owing to the advanced hour of the day, Mr. Myott, of Con-

gleton, Cheshire, postponed until the Leicester meeting the resolution forwarded from the North Cheshire Chamber relating to taxation under the compensation clauses of the Cattle Diseases Act.

A vote of thanks to Mr. More, as chairman, terminated the proceedings.

PETERBOROUGH CHAMBER OF AGRICULTURE.

A meeting of this Chamber was held on Wednesday, May 13, when Mr. W. Wells presided.

Mr. TURNER called attention to Lord Devon's bill, which he described as one which will give additional power to the Poor-Law Board, and prevent the Guardians in each union from exercising that supervision and control over the expenditure to which, in his opinion, they were fairly entitled. He examined the clauses of the bill seriatim, and spoke of Clause 5, for joining parishes with a population not exceeding 300, for the purpose of the election of Guardians, as ambiguous in its meaning. It gave no power to dispossess a parish of its Guardian, and the question arose whether any diminution of numbers was contemplated. In any case he considered the clause objectionable. In the Union of Peterborough there are 22 parishes with populations under 300, but assessed at £41,182. Was it contemplated to disfranchise these parishes, or group them? and how could they be incorporated with a large parish if there was no such parish near? Then if a small parish was incorporated with a large parish, the guardians remaining the same, the large parish would virtually return the extra guardians, and the small one none. If carried, the clause would affect the agricultural interest most unfairly, by throwing the control of the unions into the hands of guardians in towns, who, paying but little towards the poor-rates themselves, could not be supposed to care much about the expenditure of money drawn from other sources. Clause 6 of the Bill gave the Poor Law Board power to appoint any officer whom Guardians failed to appoint within twenty-one days of being required to appoint, and this ingeniously provided a means for coercing the Guardians into paying the new officer called a visitor, provided for in the subsequent clause. There were now 13 inspectors, at a salary of about £800 per annum each; and if they did their duty, there would be no occasion for the new officer. If the extra charge of this officer arose, as he thought it did, from the misconduct in some Metropolitan Unions, it was surely unjust to impose it upon unions that are well managed. Clause 8 was a very objectionable clause, as it gave power to the Poor Law Board to order furniture, fixtures, sewers, and "other conveniences" for the workhouse. Clause 24 took the power of appointing District auditors from

the chairmen and vice-chairmen of the District, and gave it to the Poor-Law Board. This he held to be objectionable, as it was all the patronage the gentlemen in question held in return for the time spent and trouble they took in Union affairs. A second objection was that an office worth £800 a-year would be lost to the district, as the Poor Law Board would not be likely to appoint a resident in the district, or a gentleman who would live there. Clause 27, for incorporating all extra-parochial places, was a good one, as was clause 28, giving guardians power to make a valuation of property alleged to be rateable, and 29 for mutual bearing of the costs of appeals. Clause 32, giving power to the guardians to employ a person to assist the Assessment Committee in making valuations was also a commendable one, as it would lessen expense and avoid appeals. Passing through the remaining clauses which deal with matters of routine, he contended that enough had been said to prove that the bill was, on the whole, an unsatisfactory one, and he moved the following resolutions, which were carried unanimously:—

That this Chamber is of opinion that the proposed bill will, by its tendency to centralisation, and by the whole or partial disfranchisement of rural parishes, increase local taxation, and act injuriously to the interests of ratepayers generally.

That in the opinion of this Chamber no bill for amending the laws for the relief of the poor can be deemed satisfactory which does not provide that personal property shall be rated in proportion to its value, and bear its fair share of the general burden.

Mr. ATTENBOROUGH, in proposing a vote of thanks to Mr. Turner, said he did not think it was much use petitioning the present Parliament (a laugh). What they ought to do was to be prepared for the next (applause and laughter), and vote for no member, Whig or Tory, who did not conform to their views of things (applause). There was no harm in a petition, and he would second the motion for one. Let them look out for a member of Parliament for themselves, and take care that they had a practical man, who knew his duties and was prepared to discharge them, instead of one who would merely make a fine speech on the hustings and nurse their babies (applause and laughter).

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL, *Wednesday, May 6, 1868.*—Present, Lord Walsingham, vice-president in the chair; the Duke of Devonshire, K.G., the Duke of Rutland, K.G., the Earl of Shrewsbury, Lord Berners, Lord Bridport, Lord Chesham, Lord Kesteven, Lord Tredegar, Lord Vernon, the Hon. H. G. Liddell, M.P., Sir E. Kerrison, Bart., Sir Massey Lopes, Bart., M.P., Sir A. K. Macdonald, Bart., Sir T. Western, Bart., M.P., Mr. Baldwin, Mr. Barnett, Mr. Bowly, Mr. Bramston, Mr. Cantrell, Mr. Clayton, Colonel Challoner, Mr. Clive, M.P., Mr. Davies, Mr. Dent, M.P., Mr. Druce, Mr. Edmonds, Mr. Brandreth Gibbs, Mr. Hassall, Mr. Holland, M.P., Mr. Hornsby, Mr. Hoskyns, Mr. Hutton, Mr. Jonas, Colonel Kingcote, M.P., Mr. Milward, Mr. Pain, Mr. Randell, Mr. Read, M.P., Mr. Rigden, Mr. Sanday, Mr. Shuttleworth, Mr. R. Smith, Mr. Stone, Mr.

Thompson, Mr. Torr, Mr. Turner, Mr. Webb, Mr. Wells, Major Wilson, Mr. Jacob Wilson, Professor Simonds, and Dr. Voelcker.

Mr. William A. Gibbs, Gilwell Park, Sewardstone, Woodford, was elected a Governor, and the following new members were elected:—

Adams, James, Oxtou, Southwell.
Allen, Joseph, jun., 19, Seymour-street, Leicester.
Arnold, George, jun., Dilton, North Devon.
Bailey, Edward, Leicester.
Baines, John, Knighton, Leicester.
Baker, William, Moor Barns, Atherstone.
Bamlett, A. C., Thirsk.
Bent, Thomas, Queenborough, Leicester.
Bithrey, W. Silvester, 38, Hastings-street, Leicester.
Blow, W. Wootton, Tavistock Hotel, London.
Bolton, J. Adams, M.D., Campbell-street, Leicester.

Bonnall, John, Grantham.
 Brand, Joseph S., Leicester.
 Briggs, William, Elford Park, Tamworth.
 Britten, Thomas, Little Billing, Northampton.
 Carson, James A., La Belle Sauvage Yard, London.
 Cartwright, John, Oadby, Leicester.
 Cartwright, Thomas, Dunston Pillar, Dunston.
 Checkland, George, Park House, Knighton, Leicester.
 Clark, G. W., 6, Belgrave Place, Tunbridge Wells.
 Cooch, John, Harlestone, Northampton.
 Corbett, Thomas, Perseverance Iron Works, Shrewsbury.
 Devas, Horace, Spondon Hall, Derby.
 Everard, William, Narborough Wood House, Enderby, Leicester.
 Everett, Francis H., Bridgham, Thetford.
 Filgate, Leopold G. P., Lissvenney, Ardle, Louth.
 Gardener, John, Twycross, Atherstone.
 Gibsons, John, Rotherby, Leicester.
 Goff, William, Carriglea, Kingstown, Dublin.
 Gunnell, Thomas, Milton, Cambridge.
 Harding, Charles, Knighton, Leicester.
 Harris, Edward, Hocking, Folkingham.
 Herbert, Thomas, 86, Welford-road, Leicester.
 James, Thomas, Shushions Manor, Church Eaton.
 Lacey, Robert, Hoton, Loughborough.
 Liewley, Thomas, Doddington, Lincoln.
 Lombe, H. Evans, Melton Hall, Wymondham.
 M'Alpin, J. W., Leicester.
 Mudford, Joseph, Hoe Fields, Thurlaston, Hinckley.
 Mynors, W. C. T., Elford Lowe, Tamworth.
 Nethercote, H. Ormond, Moulton Grange, Northampton.
 Noon, Charles, The Laurels, Leicester.
 Norreys, Lord, Wytham, Oxford.
 Nuttall, Thomas, Manor House, Beeby, Leicester.
 Painter, Robert, 18, Gallowtree Gate, Leicester.
 Parr, Hermon, Barton, Nottingham.
 Rutherford, Thomas, Hothfield, Ashford, Kent.
 Scott, William, Normanton Turville, Hinckley.
 Sketchley, William, Great George-street, Weymouth.
 Stratton, George W., Aylestone, Leicester.
 Thomson, T. Harrower, Leicester.
 Warner, Edward, Bury-street, Stowmarket.
 Wilshire, C. W., The Frythe, Welwyn.
 Woodroffe, W. S., Normanton-upon Soar, Loughborough.
 Wynne, Owen S., Peniarth, Towyn.

FINANCES.—Major-General Lord Bridport presented the report of the committee, from which it appeared that the secretary's receipts during the past month had been examined by the committee, and by Messrs. Quilter, Ball, and Co., the society's accountants, and were found correct. The balance in the hands of the bankers on April 30 was £3,243 11s. The committee have again considered the financial condition of the society, and, although at the present moment there is a large balance in hand, which is usual at this period of the year, and required to meet the expenditure of the annual meeting, yet the invested capital of the society has gradually diminished since July, 1865, when the capital was £21,027 19s. 7d., and it now stands at £16,027 19s. 7d., stock in the New 8 per Cents. The committee, therefore, beg leave to call the serious attention of the council to the fact that the capital has lessened at least £5,000, after taking into consideration the money expended for the show-yard plant, or an annual loss of £1,000; it follows, therefore, that some means must be adopted to add to the numbers of the society, or the council must resolve on a diminution of expenditure. The report was adopted.

JOURNAL.—Part I., Vol. IV., 2nd series, was laid on the table. Mr. Thompson, chairman, reported the recommendation of the committee that a reprint of Mrs. Somerville's article on Poultry be made, and sold at a cost of 2d. each. This report was adopted.

LEICESTER MEETING.—Mr. Thompson, chairman, reported that the tender for refreshments in the show-yard, made by Messrs. Waldram and Crane, of Leicester,

had been accepted. The surveyor reports that possession of a sufficient portion of the show-ground has been obtained to enable the contractor to make satisfactory progress; that no obstruction or hindrance has been experienced, and that no doubt exists but that the works will be completed in ample time for the Show. It is recommended that the general meeting of the Society shall be held on Saturday, the 18th July, at 11 a.m. A request made by the Leicestershire and Waltham Agricultural Society to be allowed to pass their members into the Show-yard by tickets to be purchased of the Royal Agricultural Society of England had been acceded to, the details to be arranged by the Finance Committee. Major Wilson was unanimously recommended as the Steward-elect of Implements. The surveyor was authorised to put himself in communication with the Midland Railway Company's engineer, to arrange the details of the accommodation required for the unloading of heavy machinery in the Show-yard. This report was adopted.

EDUCATION.—Mr. Holland, M.P., chairman, reported that 18 candidates entered for the Society's honours and prizes; that 12 of these were present at the examinations, and that, in the opinion of examiners who have assisted on former occasions, the competition has been superior in its own nature to that hitherto experienced. Notwithstanding this, the committee are unable to classify the competitors, nor can they grant any certificates of merit, because the terms approved by the Council require that every candidate should satisfy the examiners in the following subjects, viz., In the Science and Practice of Agriculture; in Land-surveying, or in Mechanics as applied to Agriculture; and in Book-keeping; consequently to pass in Book-keeping is essential to success. In this subject, however, no one candidate had succeeded in obtaining even the minimum fixed by the examiners, who report: "All the candidates came under the category of 'not passed.'" The committee, therefore, confine themselves to the recommendation of the following prizes being awarded to the undermentioned candidates as having shown respectively the highest merit in each subject named:—

The Science and Practice of Agriculture.—Simon Hewes Walton, Farncombe Farm, Whichford, Shipston, £10.

Mechanics.—Thomas John Elliott, Wilton, Salisbury, £10.

Chemistry.—George Kent Walton, Long Compton, Warwickshire, £10.

Botany.—Richard George Scriven, Castle Ashby, Northampton, £10.

Geology.—Ditto, £5.

Veterinary Science.—Robert Brydon, Burncastle, Lanark, N.B., £5; T. J. Elliott, £5.

Land Surveying.—John Joseph Harle, Haydon Bridge, Northumberland, £5.

Book-keeping.—No award.

This report was adopted.

COMMITTEE OF SELECTION.—Mr. Thompson, chairman, reported that Mr. Lawes, having intimated his intention of resigning his seat at the Council, the committee had resolved that it be recommended to the Council that Mr. Lawes' resignation be not accepted. The House-list of members of Council to be recommended for re-election having been considered, it was resolved that the small number of members of Council in District A (Durham, Northumberland, and North and East Ridings of Yorkshire) be pointed out; and the name of Mr. Thomas Christopher Booth, of Warlaby, Northallerton, be recommended to fill one of the vacancies caused by the retirement of members of the Council by rotation. This report was adopted.

HOUSE LIST.—Agreeably with the bye-laws, the Council arranged by ballot the following election-list, to

be recommended by them for adoption at the ensuing general meeting on the 22nd instant :

ATTENDANCES (FROM THE AUGUST MEETING, IN 1886, TO THE PRESENT TIME).

Names.	Monthly Councils. 15.	Special Councils. 7.	Weekly Councils. 10.	Committee.	
				Number of Meetings.	Attendances.
Amos, Charles Edwards, 5, Cedar's-road, Clapham-common, Surrey.	10	...	...	25	15
Barthropp, Nathaniel George, Hacheston, Wickham Market, Suffolk.	7	2	...	20	7
Booth, Thomas C., Wariaby, Northallerton.	...	...	...	...	...
Bowly, Edward, Siddington House, Cirencester, Gloucestershire.	9	...	...	18	5
Clive, George, M.P., Ferrystone, Ross, Herefordshire.	5	1	...	...	...
Davies, David Reynolds (elected Dec. 5, 1886), Mere Old Hall, Knutsford, Cheshire.	7	...	...	11	4
Devonshire, His Grace the Duke of, Holkar Hall, Milnthorpe, Westmoreland.	4	1	...	...	...
Druce, Joseph, Eynsham, Oxford.	10	3	...	18	10
Edmonds, William John, (elected Feb. 5, 1886), Southrop, Lechlade, Gloucestershire.	2	...	...	...	...
Gibbs, B. T. Brandreth, Halfmoon-street, Piccadilly, London, W.	15	5	1	59	56
Hassall, William (elected May 1, 1887), Bubeney, Whitechurch, Salop.	2	...	...	...	...
Holland, Edward, M.P., Dumbleton Hall, Evesham, Worcestershire.	13	4	2	73	49
Hornaby, Richard, Spittlegate, Grantham.	12	2	...	17	11
Hoskyns, Chandos Wren, Harewood, Ross, Herefordshire.	9	2	...	22	21
Hutton, William, Gate Burton, Gainsborough, Lincolnshire.	3	1	1	...	...
Kesteven, Lord (elected April 3, 1887), Ca Warwick, Stamford, Lincolnshire.	3	2	2	...	...
Lawes, John Bennett, Rothamsted, St. Albans, Herts.	3	...	...	5	2
Macdonald, Sir Archibald Keppel, Bart., Woolmer Lodge, Liphook, Hants.	9	1	1	5	1
Randell, Charles, Chadbury, Evesham, Worcestershire.	13	2	...	62	55
Read, Clara Sewell, M.P., Honingham, Thorpe, Norwich.	11	2	1	11	4
Richmond, His Grace the Duke of, Goodwood, Chichester.	4	...	...	...	...
Sanday, William, Holmespierepoint, Notts.	9	...	...	21	5
Shrewsbury and Talbot, Earl of, Ingestre Hall, Staffordshire.	10	2	1	...	...
Shuttleworth, Joseph, Hartsholme Hall, Lincoln.	8	1	...	17	2
Wells, William, Holmeswood, Peterborough, Northamptonshire.	12	4	...	30	13

COUNTRY MEETING OF 1889.—The report of the committee appointed to inspect the various sites offered to the Society at Liverpool, Manchester, and Preston, having been read, the Council were favoured by the attendance of deputations from the above towns :

Liverpool Deputation.—Messrs. Graves, M.P., Laird, M.P., Pim, M.P., Tolemache, M.P., Alderman Hubback, Robertson Gladstone, John Grant Morris, Robson (Borough Surveyor), Thomas Baines, and Sir Philip Egerton, bart., M.P.

Manchester Deputation.—The Mayor of Manchester and Town Clerk, Mayor of Salford and Town Clerk, the Mayors of Ashton-under-Lyne, Bolton, Rochdale, Stockport, and Stalybridge; Sir James Watts, Kt.; Joseph Whitworth, Esq.; Oidham Whitaker, Esq.; J. W. Maclure, Esq.; J. H. Law, Esq.; Mr. Henry Nield, Mr. W. T. Pownall. The deputation was accompanied and introduced by the Earl of Wilton, Earl of Ellesmere, Lord Egerton of Tatton, Hon. Algernon Egerton, M.P.; Hon. Wilbraham Egerton, M.P.; Right Hon. T. M. Gibson, M.P.; Thomas Bazley, M.P.; Jacob Bright

M.P.; E. W. Watkins, M.P.; John Platt, M.P.; John T. Hibbert, M.P.; Thomas B. Potter, M.P.; Edmund Potter, M.P.; R. N. Phillips, M.P.; John Cheetham, M.P.; Lieut.-Gray, M.P.

Preston Deputation.—The Mayor of Preston, Miles Myres, Esq.; the Earl of Bective, M.P.; Lord Kenlis; Colonel Wilson Patten, M.P.; Hon. F. A. Stanley, M.P.; Sir T. Fernor Heskeith, M.P.; Mr. W. Lowther, M.P.; Lord Frederick Cavendish, M.P.; Mr. Fielden, M.P.; Mr. W. Marshall, M.P.; Mr. Greene, Whittington Hall; Mr. Dawson Greene, Whittington Hall; Mr. R. Assheton Cross (Chairman of Quarter Sessions of Lancaster); Mr. W. J. Garnett, Quernmore Park; Rev. J. Shepherd, Birley; Mr. George Moore, Whitehall, near Wigton; Mr. J. P. Foster, Killhow, Cumberland; Mr. T. Towneley Parker, Rev. L. C. Wood, Mr. Drewry, Mr. Thomas Fair, from the Council of Royal North Lancashire Agricultural Society; the Mayor and Town Clerk of Blackburn, the Mayor of Lancaster, Mr. Alderman Edmund Birley, Mr. Councillor Catterall, Mr. Councillor Gilbertson, Mr. Ascroft (Town Clerk), Preston; and Mr. Garlick, Borough Steward.

These gentlemen having communicated to the Council the fullest local information connected with their respective districts, and having answered satisfactorily the enquiries made of them by the Council, the Chairman expressed to them the best thanks of himself and the Council for their kindness in having attended the meeting that day, and for the deep interest they had evinced in promoting the objects of the Society.

The deputations having withdrawn, the Council proceeded to the consideration of the particular locality best suited, under all circumstances, for holding the country meeting next year; and, after some discussion of the respective advantages of each position to which their attention had been called, it was decided in favour of Manchester by 25 votes, against 18 for Preston, no vote being given for Liverpool.

Mr. Torr having moved that the Society hold their country meeting in 1870 in the district comprising the counties of Berks, Buckingham, Hants, Kent, Middlesex, Oxford, Surrey, and Sussex, it was seconded by the Earl of Shrewsbury, and carried.

THE FARMERS' FRIEND.—At the meeting of the Torrington Agricultural Association, Mr. T. Dyke Acland said: "Farmer's friend" is a very peculiar designation—it may be taken in different ways. The school in which I was brought up was that of Philip Pusey; he married a West country lady. He worked hard for sixteen years, giving up nearly all his time to be the editor of the *Journal of the Royal Agricultural Society*. When he died some of us thought that he was entitled to some permanent memorial of the amount of good which he had done to the farmers. It was thought that his name should be perpetuated to all time. I am sorry to say that we did not succeed in our design; why that was I will not say. One gentleman said: "Well, if we calculate on the most moderate and lowest possible scale what we should pay the editor for the work done to this Society, we owe him £10,000," but not 10s. did we get to perpetuate his name. I may say that his monument will live for ever in that Journal—a monument built by his own hands; it is recorded in the 16th volume of the Journal. The humble endeavours which I have made are not to be mentioned for a moment beside what he did. But when I voted for Free Trade—when I helped to ruin you all (laughter)—Mr. Pusey said: "Your duty is to go to work for these farmers—to help to work out the problem before them." Mr. Pusey had been working for them a great many years before; he had been looking ahead, helping the farmers 'to help themselves,' by which alone they could be materially benefited. I thought it to be my duty in a humble way to do for four or five western counties what Mr. Pusey did for all England—viz., learn from the farmers their own knowledge of their own business, and then try to make it intelligible to the rising generation—assisting them first to farm as well as their fathers, and if they could do that, then to farm better if possible. I think, gentlemen, that is the way to be

the farmer's friend (cheers and "True"). I don't know whether you will think that was a good school, but it was the school in which I tried to walk (cheers). Another passage in Mr. Pusey's life is, that twenty-five years ago he brought a bill into Parliament, the object of which was to amend the laws of

England as they bear on the capital which farmers lay out on the land, to facilitate better arrangements between landlord and tenant, to help them to get rid of obstacles in the law of land preventing the existence of good arrangements. We could not carry the bill.

SALE OF THE LITTLEBURY HERD OF SHORTHORNS.

This sale took place on Thursday, May 7, under the direction of Mr. Strafford, at whose summons a large company assembled round the box, many of whose names will be found amongst the list of purchasers. We spoke previously to the merits of Mr. Clayden's stock after a personal inspection, when we said that "he has been doing something with them all through; and that nothing can say more for his management than the number of cows and heifers at present in-calf. There may or there may not be any 'nurses' about; but, in any case, they have done no harm. The animals look in good, fair condition, and nothing more; while a great 'milk-man,' who accompanied us on our round, dwelt again and again on their good bags, and other such signs of their use for dairy purposes. Their coats, too, are almost invariably soft, silky, and bountiful, and their quality, as judged by the hand, often as excellent. If animals could sell themselves; if milking properties, a wealthy touch, and a fine frame can conduce to an average, this should come out well at Littlebury." We must now admit, however, that the average was not so good as we had anticipated, most probably from some of the pedigrees not being very long, or quite so fashionable as should be. The top-price cow, as we said she should be, in our preliminary report, was Brilliant, which even at her age beat so good a young bull as Littlebury; but this animal and his sister both went, by comparison, very cheap; and we question whether for all its good qualities the Littlebury herd was properly appreciated by the Shorthorn connoisseurs.

COWS AND HEIFERS.

THE FIGURES REFER TO COATES'S HERD BOOK.

Sunshine, calved March 8, 1859; by Lord Erskine 1st (14815), out of Strawberry, by Alma (14088).—Purchased by Mr. Cox, 37 gs.
 Diadem, calved June 29, 1860; by Sir Charles (16948), out of Diana 2nd, by Great Duke (12973).—Mr. Blackwell, 54 gs.
 Gaiety, calved July 16, 1860; by Lord Althorp (14800), out of Tit, by Horatio (10335).—Mr. Upson, 41 gs.
 Daphne, calved May 13, 1861; by Duke Humphrey (15910), out of Diana 2nd, by Great Duke (12973).—Mr. Cox, 61 gs.
 Brilliant, calved November 10, 1861; by May Duke (13320), out of Blanche 3rd, by Antinous (12401).—Mr. Cheney, 120 gs.
 Rosette, calved August 8, 1860; by Prince of Prussia (16752), out of Red Rose, by Horatio (10335).—Mr. Cobb, 36 gs.
 Lady Bird, calved November 18, 1861; by Count de Gourcy (17632), out of Luxury, by Cheltenham (12588).—Mr. Trethewy, 41 gs.
 Lady Essex, calved July 20, 1862; by Grand Duke of Essex (17995), out of Lady Franklin, by Prince of Prussia (16752).—Col. Brise, 37 gs.
 Lady Braybrooke, calved February 21, 1863; by Englishman (19701), out of Miriam, by Snowball (18309).—Mr. Derham, 40 gs.
 Ruby, calved December 8, 1863; by Lord of the Harem (16430), out of Cornelian, by Mameluke (13289).—Mr. Leney, 60 gs.
 Dahlia, calved December 10, 1863; by Marquis of Cornwallis (18337), out of Diadem, by Sir Charles (16948).—Mr. Trethewy, 32 gs.

Red Empress, calved December 31, 1863; by Marquis of Cornwallis 2nd (20292), out of Rosy, by Tortworth (17133).—Mr. Derham, 43 gs.
 Lady Lucy Thorndale, calved June 20, 1864; by Third Duke of Thorndale (17749), out of Lady Bird, by Count de Gourcy (17632).—Mr. Derham, 61 gs.
 Dora, calved October 12, 1864; by Marquis of Cornwallis 2nd (20292), out of Diana 2nd, by Great Duke (12973).—Capt. Aveling, 50 gs.
 Damask, calved February 16, 1865; by Marquis of Cornwallis 2nd (20292), out of Diadem, by Sir Charles (16948).—Mr. Metheringham, 46 gs.
 Fame, calved March 23, 1865; by Marquis of Cornwallis 2nd (20292), out of Flirt, by Kirklevington (11639).—Mr. Saville, 60 gs.
 Honeysuckle, calved May 23, 1865; by Marquis of Cornwallis (18337), out of Daphne, by Duke Humphrey (15910).—Captain Aveling, 66 gs.
 Lady Paramount, calved May 25, 1865; by Lord Paramount (20218), out of Lady Bird, by Count de Gourcy (17632).—Herr Zoeppritz, 40 gs.
 Lady Oxford, calved September 12, 1865; by Lord Chancellor (20160), out of Lady Richmond, by Oxford 2nd (18507).—Mr. Drewry, 52 gs.
 Lady of the Glen, calved April 14, 1866; by Costa (21487), out of Lady Bird, by Count de Gourcy (17632).—Mr. Gamble, 70 gs.
 Blanchette, calved April 15, 1866; by Costa (21487), out of Brilliant, by May Duke (13320).—Mr. Macintosh, 70 gs.
 Happiness, calved April 16, 1866; by Costa (21487), out of Daphne, by Duke Humphrey (15910).—Mr. Moore, 62 gs.
 Rarity, calved June 17, 1866; by Costa (21487), out of Ruby, by Lord of the Harem (16430).—Mr. Macintosh, 95 gs.
 English Lady, calved July 31, 1866; by Costa (21487), out of English Lassie, by Englishman (19701).—Lord Bolton, 59 gs.
 Fairy, calved June 16, 1866; by Costa (21487), out of Flirt, by Kirklevington (11639).—Mr. Sewall, 41 gs.
 Lady Archdale, calved September 1, 1866; by Archdale (31183), out of Lady Thorndale, by 3rd Duke of Thorndale (17749).—Mr. Frankham, 41 gs.
 Rosette, calved October 29, 1866; by Costa (21487), out of Rosette, by Prince of Prussia (16752).—Mr. Moore, 54 gs.
 Dame Littlebury, calved January 3, 1867; by Costa (21487), out of Diadem, by Sir Charles (16948).—Mr. Moore, 62 gs.
 Lady Louisa, calved March 1, 1867; by Costa (21487), out of Lady Braybrooke, by Englishman (19701).—Herr Zoeppritz, 37 gs.
 Florid, calved May 1, 1867; by Archdale (31183), out of Fame, by Marquis of Cornwallis 2nd (20292).—Mr. Abbott, 45 gs.
 Lady of the Glen 2nd, calved April 25, 1867; by Costa (21487), out of Lady Bird, by Count de Gourcy (17632).—Mr. Gamble, 60 gs.
 Rarity 2nd, calved May 6, 1867; by Costa (21487), out of Ruby, by Lord of the Harem (16430).—Mr. Leney, 71 gs.
 Flora, calved May 14, 1867; by Archdale (31183), out of Flirt, by Kirklevington (11639).—Mr. Congreve, 41 gs.
 Elegance, calved June 17, 1867; by Costa (21487), out of Englishman's Lassie, by Englishman (19701).—Mr. Saville, 37 gs.
 Sunset, calved June 19, 1867; by Archdale (31183), out of

Sanrise, by Marquis of Cornwallis 2nd (20292).—Mr. Saville, 25 gs.
 Dewdrop, calved September 9, 1867; by Costa (21487), out of Diana 2nd, by Great Duke (12973).—Herr Zoepfritz, 46 gs.
 Harpeichord, calved October 7, 1867; by Costa (21487), out of Damask, by Marquis of Cornwallis 2nd (20292).—Mr. Abbott, 30 gs.
 Rosabel, calved October 8, 1867; by Costa (21487), out of Rosette, by Prince of Prussia (16752).—Mr. Murton, 32 gs.
 Harmony, calved October 7, 1867; by Costa (21487), out of Damask, by Marquis of Cornwallis 2nd (20292).—Mr. Abbott, 32 gs.
 Lady Essex 2nd, calved December 13, 1867; by Costa (21487), out of Lady Essex, by Grand Duke of Essex (17995).—Mr. Adecock, 24 gs.
 Lady Valentine, calved February 14, 1868; by Littlebury (24341), out of Lady Oxford, by Lord Chancellor (20160).—Mr. Wythes, 20 gs.
 Dorothy, calved March 2, 1868; by Costa (21487), out of Diadem, by Sir Charles (18948).—Mr. Graham, 45 gs.

HEIFER CALVES.

Lady Glen 3rd.—Mr. Barton, 15 gs.
 Heliotrope.—Mr. Sewell, 13 gs.
 Jessamine.—Mr. Patmore, 17 gs.
 Regina.—Mr. Wythes, 13 gs.

BULLS.

Costa (21487), calved April 28, 1863; by Barleycorn (17348), out of Columbine, by Londonderry (18169).—Mr. Webb, 55 gs.
 Littlebury (24341), calved January 24, 1866; by Costa (21487), out of Diadem, by Sir Charles (16948).—Mr. Dangar, 105 gs.
 Marmion (24533), calved March 9, 1866; by Costa (21487), out of Miriam, by Snowball (15309).—Mr. Dangar, 40 gs.
 Lord of the Vale (24446), calved October 23, 1866; by Costa (21487), out of Lady Essex, by Grand Duke of Essex (17995).—Mr. Sworder, 40 gs.
 General Costa, calved January 9, 1867; by Costa (21487), out of Gaiety, by Lord Althorp (14800).—Mr. Frost, 56 gs.
 Barney Bodkin, calved January 16, 1867; by Archdale (21183), out of Blanche 3rd, by Antinous (12401).—Mr. Lindsell, 29 gs.
 Robin Hood, calved February 26, 1867; by Costa (21487), out of Red Empress, by Marquis of Cornwallis 2nd (20292).—Lord Bolton, 57 gs.
 Magician, calved May 23, 1867; by Costa (21487), out of Miriam, by Snowball (15309).—Mr. Murton, 30 gs.
 Nabob, calved August 14, 1867; by Costa (21487), out of Dulcet, by Marquis of Cornwallis (18337).—Mr. Trigg, 28 gs.
 Lord Costa, calved September, 9, 1867; by Costa (21487), out of Lady Lucy Thorndale, by 3rd Duke of Thorndale (17749).—Mr. Arabin, 30 gs.
 Gay Lad, calved December 16, 1867; by Costa (21487), out of Gaiety, by Lord Althorp (14800).—Mr. Pyson, 35 gs.
 Dreadnought, calved December 10, 1867; by Costa (21487), out of Dora, by Marquis of Cornwallis 2nd (20292).—Mr. Bray, 19 gs.
 Saccharometer, calved March 17, 1868; by Costa (21487), out of Sunshine, by Lord Erskine 1st (14815).—Mr. Cooke, 17 gs.

SUMMARY.	Realised.	Average.
46 cows, heifers, and calves ...	£2,219 14	£48 5 0
13 bulls and calves	560 8	43 15 6
59 of all ages	2,788 16	47 5 6

The sale of Mr. Champion's shorthorns took place at Calcut by Messrs. Haslam and Son. This herd has been cultivated for seventeen years from the well-known blood of the various tribes of Mr. Stratton, Mr. Booth, and Mr. Bates. The whole of the cattle by their condition showed that no improper course of feeding had been adopted to give

them appearance. At half-past one o'clock the first cow Vestal, put in her appearance, and the total amount of the sale was £1,849 11s. 6d. Twenty cows realized £593 5s., twelve heifers £487 4s., six yearlings £137 11s., eleven calves £189 10s. 6d., four bulls £160 13s., two yearling bulls £88 5s., five bull calves £73 10s., ten young steers £139 13s. A few pure-bred Berkshire pigs were afterwards sold at good prices, one sow with two pigs under three weeks old realizing £14 1s.

THE LAW OF DISTRESS FOR RENT.

At the last meeting of the Hereford Chamber of Agriculture, Mr. BRADSTOCK said: Although he agreed in the opinion that personal as well as real property should be rated for parochial and county purposes, still he had not yet arrived at the conviction that such rating of personal estate would at all confer any positive advantage upon the occupiers of land or houses, so long as the owners were secured from any loss from the insolvency of the tenant by a law which gave them a prior claim of all the other creditors. This prior claim was given to the holders of property on the condition that they should bear the whole burden of local taxation; but, by one contrivance or another, the burden had been entirely shifted from the owners to the occupiers; and many of the owners were very independent, while others, both in and out of Parliament, were ready to assist in increasing that burden. They had an instance of this at the late Epiphany Quarter Sessions, when, with one or two exceptions, including Captain Power and Dr. Edmund Jones, and others, the whole of the magistrates agreed to—and Mr. King King undertook to present—a petition to Parliament, praying for the immediate abolition of turnpike-trusts, and the charge for the future repairs to be made upon the county-rate. It did appear to him, after all the little matters were considered, that if they did succeed in getting a measure passed to make all descriptions of property, both real and personal, liable to local taxation, that they would be entitled to the thanks and gratitude of the country, inasmuch as they would cut away and destroy that protective system which they all knew had given an artificial value to land. The system he had referred to gave an artificial value to land, because it had created an excessive competition for it. It placed the tenants of limited means and little experience on equal terms with the tenant of capital and experience and practical knowledge. Of course he did not mean to include all landlords as taking the highest bidder, for there were many who acted up to the principle of "live and let live," and who were desirous of seeing a respectable and prosperous tenantry; but he was afraid this could not be said of all (Hear, hear). He was ready to admit that it was necessary the value of land should be ascertained, like all other commodities, by the demand; but he had no hesitation in saying that it was utterly at variance with the spirit of equality, which was generally exemplified in the laws of a country, to give greater security to the capital invested in the fee-simple of land, than to capital invested in trade by the industrial classes (Hear, hear, and applause). As he had before remarked, and as they knew, amongst the numerous competitors for land there were some lacking experience—persons who held very extravagant notions of the profits to be derived from it. Many of these persons were always ready to give extraordinary and ruinous rents, on purpose to get the position. However great might be the loss sustained by themselves or their friends, the landlord was protected from sharing at all in that loss by a law which had been the means of giving an artificial value to land, and, in his opinion, had injured trade and its rights; and thus also it was that, in many instances, encumbered estates were prevented from passing into the hands of capitalists who had the will and the means to discharge the duties of property. He could say that there was no one who had greater respect for the aristocracy of England than he had; but if that element were necessary to the prosperity of the country, it should be, he thought, an aristocracy of wealth, and not one upheld by law, which appeared to be a disgrace to the statute-book (Hear, hear, and applause).

TIPTREE LIVE STOCK BALANCE SHEET.

SIR,—Further details being desired, I have much pleasure in furnishing them :

Attendance on stock (men and boys), equal to two men for one year at £40	£80	0	0
Horse labour, equal to one horse for one year	35	0	0
Feeding the chaff cutter, equal to one man for half a year	20	0	0
	£135	0	0
Cost of 25½ acres of green and root crops consumed by stock*	137	10	0
	£272	10	0
Deduct balance in favour of live stock as per published account	114	5	8
	£158	4	9

This is the cost of manure produced by making £702 worth of meat, wool, milk, and poultry. To make this quantity of meat, &c., the live stock consumed £550 of cake, corn, bran, malt combs, hay, and feeding stuffs, in addition to the 25½ acres of root and green crops. Something for interest of capital should be added to the above cost of manure. Then comes the all-important question—Is this £158 4s. 9d. worth of animal farm manure worth more or less in its composition and in its results than £158 4s. 9d. laid out in artificial manures? Which system would produce the most money in crops? My experience is strongly in favour of the farm manure (unwashed and unwasted), but as I do not get enough of it, I supplement it with Peruvian guano and salt at a cost of about £70 per annum. Superphosphate of lime or bones show no result on this farm, there being, I suppose, already enough in the soil. If we take either Dr. Voelcker's or Mr. Lawes' estimates and opinions, the difference in cost of the feeding principle is very considerable.† The corn I use in feeding is almost all Bean meal, the cake principally Rape, Linseed, and some Cotton; also bran and malt combs; roots only about 30lb. per each bullock daily. The manure from the consumption of the £550 of purchased food may, according to Mr. Lawes' table, be

At more than one-third of its cost, or about	£200	0	0
From the consumption of 25½ acres of green and root crops, more than	75	0	0
	£275	0	0

We have, besides, the advantage of a manure containing all the elements of the food of plants (see Liebig), while in guano there is a want of certain alkalies, &c., so that in fact in certain cases guano has acted as an exhauster of the soil. No such result as I have attained could be obtained by the too ordinary mode of allowing animals to roam over their food unsheltered from atmospheric vicissitudes. The great want of agriculture is more manure—much more manure—and I have proved, at least to my own satisfaction, that there is no way of restoring fertility to our exhausted fields so cheap and effective as by the feeding of live stock with food not produced on my own farm. Growing food on one side of a farm, and feeding it on the other, adds nothing to the mineral elements of the soil. It is only "robbing Peter to pay Paul," but it is not so when food produced elsewhere leaves its residue in our land. The £70,000,000 of eatables

* Green and root crops consumed: 6 acres of Mangel, 1 do. of Swedes, 3 do. of Cabbage, 9 do. of Italian Rye-grass, 5½ do. white Turnips, after Peas picked for London market; 1 do. Tares; total, 25½ acres. The after-math of Clover and pasture.

† Mr. Lawes' estimated value of the manure obtained from the consumption of

1 ton of Decorticated Cotton cake	£6	10	0
" Rape cake	4	18	0
" Linseed cake	4	12	0
" Malt dust	4	5	6
" Beans	3	13	0

and drinkables imported annually from foreign countries, added to our own produce, ought, on this principle, to greatly enrich our soil, but it does not, for most of it goes down our sewers to poison our rivers. We are only just beginning to think about utilizing those precious and costly streams of life-preserving elements, which we have at hand at small cost, and we have been very reluctantly brought to this step in the right direction by the force of sanitary, not agricultural considerations.—It thus appears that there is a charge of £1 per acre over the whole farm for the manure produced from the consumption of £557 of purchased food, and the produce of 25½ acres of green and root crops. The real question at issue is—Do we get, by the use of this manure, an addition to our crops of the value of £1 per acre? I am satisfied that I do, and much more than £1. It is, in fact, the key to the profit of the farm: without it I could not derive a profit from this poor land. When we consider that an addition to the crop of either 2½ bushels of Wheat, 4 of Barley, or 5 of Oats, would more than pay this £1 per acre, there need be little doubt about the result.

April, 1868.

J. J. MACH.

HIGHLAND AND AGRICULTURAL SOCIETY.

A special general meeting of this Society, to vote as address to her Majesty the Queen on the providential escape of his Royal Highness the Duke of Edinburgh from the recent attempt on his life, and also to congratulate his Royal Highness on his merciful preservation, took place on Wednesday, May 13, Sir Thomas Buchan Hepburn of Smeaton, Bart., in the chair.

Lord MELVILLE read and moved the adoption of the following addresses:

"TO THE QUEEN'S MOST EXCELLENT MAJESTY.

"Most gracious Sovereign,
"We, your Majesty's most devoted and loyal subjects, the Highland and Agricultural Society of Scotland, incorporated by royal charter, in special general meeting assembled, deeply impressed with feelings of ardent attachment to the sacred person of your most gracious Majesty, and in all our national warmth of loyalty, beg respectfully to approach the Throne with an expression of the abhorrence which we, in common with all classes of your Majesty's subjects, feel for the atrocious attempt which has been recently made on the life of his Royal Highness the Duke of Edinburgh. We deeply sympathise with your Majesty and the Royal Family in the distress this murderous assault must have occasioned; and we humbly beg leave to offer to your Majesty our heartfelt congratulations on the merciful interposition which has preserved the life of your beloved son, who, by his manly and generous conduct on all occasions, has so endeared himself to his country. We thank Almighty God that He has been pleased to spare the life of his Royal Highness; and we earnestly pray that he may be speedily restored to his wonted health."

"TO HIS ROYAL HIGHNESS THE DUKE OF EDINBURGH.

"May it please your Royal Highness,—

"We, the Highland and Agricultural Society of Scotland, assembled in special general meeting, beg most respectfully to offer to your Royal Highness our sincere congratulations on the providential escape from the danger to which your life has been recently exposed. Your Royal Highness being connected with Scotland by many ties, we desire to express our most devoted feelings of national indignation on the infamous attempt upon your life, and to express our heartfelt gratitude at the merciful interposition of Almighty God in preserving you from the hands of an assassin. It is our sincere hope that it may please Divine Providence to restore your Royal Highness speedily to the full enjoyment of health and strength; and we earnestly pray that your life may be long preserved as a blessing to your royal mother and to your country."

The addresses were unanimously adopted.

SEWAGE FARMING.

TO THE EDITOR OF THE NORFOLK NEWS.

SIR,—From the leading article of the *Mark Lane Express* of the 20th of April, it appears that farmers have at last laid aside the reticence they have hitherto observed on sewage-farming, and spoken out boldly and to the point on a subject they understand, and which has hitherto been handled only by theoretical citizens and interested agents. The *Mark Lane Express* of the above date is particularly interesting, as, in addition to a long extract from the *Engineer* on the same subject, it contains a letter by a *Times* special correspondent on the sewage farm at Barking—an epitome, in fact, of the essay of Mr. Morton, the manager of the undertaking—which describes in glowing terms the results arrived at there, and also a letter from Mr. Morton expressing his satisfaction at the correctness of the account. The writer in the *Engineer*, after a fling at the “dry method” (not to be wondered at, seeing that it requires neither great intellect nor outlay to work it), speaks in almost direct contradiction of the results of the Sewage Company's undertaking. He says: “In London the problem of getting rid of the accumulated sewage has been solved, but not a step has been gained with respect to its utilization; the same statement holds good for several other towns, and if we except the everlasting ‘Craigtinnyn’ meadows and the eternal ‘Croydon,’ we shall find that little or nothing has been done in that direction—nothing commensurate with the large sums of money expended. The whole management lies with the corporate authorities of districts, and the money is procured by the most objectionable method possible—namely, the rates; and, when it is borne in mind that large sums raised in this manner have been literally wasted on abortive projects and unproductive schemes, it is no wonder that the forced contributors rebel against their obligations, and murmur at the misdirected expenditure, for it is scarcely yet established that any sum expended will recoup itself, and consequently the investment is looked upon in the light of a forlorn hope.” Very cheering this to our ratepayers, especially when we read as follows: “But an example of the utilization of sewage, worthy of the name, is about to be afforded by Norwich, whose corporation has refused to adopt, or even to countenance, any other principle than that of irrigation. 1,200 acres have been hired, and the population is 80,000.” It will be seen from this that we are experimenting for the entire nation, and that the writer wrongly supposes that the manual power of the whole population is available for the purpose, instead of only one-sixth of it; for the 65,000 people here, under the bin system, will never consent to have forced upon them, for such a visionary scheme, the universal extension of water-closets, which cannot improve, but (as statistics show) will injure their sanitary condition. The *Mark Lane Express* says: “For some time past, the notion of making money by town sewage has been gradually fading away, and people have come again to regard the matter more in its primitive sense, as simply a nuisance that must be got rid of in the best possible way. Mr. Latham, the Croydon engineer, says the results of sewage irrigation are marvellous—large and luxuriant crops are produced, and so on. This is easy enough to talk about; but does Mr. Latham know that, so far, such results are exceptional, or at any rate, if marvellous, rarely profitable? for let us only reflect on what came of the Kennedy and Telfer tales, and the tons on tons of hay, and the crops on crops of grass, to the acre, and how these poor gentlemen were absolutely swept away in the tide that, taken at the flood, led on to—failure.” “Nine farmers out of ten, who have tried sewage, will tell you that it is really worth little or nothing beyond the supply of water for irrigation.” “In the outset, we had thought that the sewage farm was to be especially tested by profitable cowkeeping; but the reference to this feature in the proceedings is curiously cautious, to say the least of it.” “With the many flattering tales, and terrible failures before us, it will be seen that we are not induced to give all the credit to the Barking experiment which is already asked or accorded. The high character of Mr. Morton notwithstanding, it will be well to bear in mind that the Lodge farm is merely the advertisement of a company.” “The continued commission of which Mr. Morton is a member will have, above all matters, to guard against the risk to the public health, and as a contingency to enquire how far such sewage or refuse can be utilized; for sewage engineering or sewage

farming must after all be a matter of sanitary regulation.” I have, without comment, made these lengthened quotations from articles in the *Mark Lane Express*, because they are peculiarly apposite and instructive, and bear upon themselves the impress of truth; for the engineer, not content with his gain, speaks his mind; and the farmer, having no interest but the diffusion of truth, gives us the benefit of his judgment upon a subject in which he is an expert. For my own part I have never believed in the marvellous assertions of the advocates of sewage irrigation farming, and am pleased to find that my theoretical opinions agree with the experience of intelligent agriculturists; and I cannot help thinking that our city executive, if they go on with their scheme, are verifying the words of Hudibras, that

“Surely the pleasure is as great
Of being cheated as to cheat.”

May 9.

J. BROWNFIELD.

THE WHITE BEET AS A FOOD FOR STOCK.

Although the mangel wurzel is now so largely used as a food for cattle, its near relation, so to speak—the white, or Silesian beet—is seldom cultivated as a food for stock in these countries. We believe that it would be very desirable to cultivate this plant to a limited extent on farms where stock feeding is largely carried on. This crop is not difficult to raise, more especially on medium soils. Its returns average about sixteen tons per Irish acre. This appears to be a scanty yield, but it is not so in reality, when the concentrated nature of the nutriment contained in the roots be taken into account. If we compare the two roots, we shall see that the beet is greatly superior to the mangel.

COMPOSITION OF THE MANGEL AND WHITE BEET.

	Mangel.	White Beet.
Water	87.78	84.00
Flesh-forming substances ...	1.54	1.50
Sugar	6.10	10.00
Gum, pectin, &c.	2.50	1.80
Woody fibre	1.12	1.70
Ash	0.96	1.90
	100.00	100.00

As there is one ton of sugar present in ten tons of beet root, the produce of an acre contains about 30 cwt. of sugar.

The importance of sugar as a constituent of the food of cattle, particularly of milch cows, is generally recognized, and it is chiefly because of their high percentages of this substance that the costly locust beans are given to stock. The sole object of converting barley into malt as food for stock is to change the insipid starch of the seed into the agreeably flavoured sugar. It would appear to us that home-grown beet would be the cheapest source of sugar available to the Irish stock-feeder. In this root he could obtain it at a far cheaper rate than he could purchase it in the form of locust beans, malt, or molasses; and there would be no loss of saccharine or other nutritive matter; for the sugar need not be extracted from the beet. It must be borne in mind, too, that for sweetening or flavouring purposes the sugar in the beet root is far more useful than that contained in malt. Beet sugar is identical with cane sugar; whilst the saccharine matter in malt is the kind termed grape sugar. Cane sugar is far more soluble in water than grape (starch) sugar; and in sweetening power one part of the former is equal to 2½ parts of the latter. It is now generally admitted that variety in diet is very desirable in the case of the lower animals, as well as in that of man; and such being the case, would it not be desirable to vary the everlasting turnips and mangel on which cattle are fed during the winter with a small proportion of the sweet beet? We know of one extensive feeder in the county of Wexford, who has for several years past grown the beet, and has found it to be an excellent addition to the ordinary food on which his stock is kept throughout the winter. On the whole, therefore, we are satisfied that whilst it is extremely doubtful that the manufacture of beet sugar would succeed in Ireland, the more general cultivation of this plant for feeding purposes would be desirable.—*Irish Farmers' Gazette*.

THE WOOL TRADE OF THE UNITED KINGDOM.

The enormous proportion attained by the wool-trade in the commerce of the United Kingdom during the last fifty years is one of the most noticeable features in our history; and the complete revolution respecting it, in our legislation, is equally worthy of observation. We need not go back for illustration to the time when our venerable forefathers, the ancient Britons, clothed themselves with the skins of wild beasts in winter, to keep out the cold, and painted themselves with a good thick coating of oil-paint, in summer, to ward off the burning rays of the sun; nor to the more refined days of Brian O'Lynn, who converted the sheep-skin into breeches, having "the woolly-side in," which is the first intimation we have in the legends of our commerce of the actual application of wool in the form of a garment. The further consideration of the various steps by which we have ascended from those simple and primitive times to the present, in the prodigious growth of the wool-trade, would lead us too far a-field, and we shall therefore confine ourselves to drawing a rapid sketch of the wool-trade for the last two hundred years, in which there is ample material for reflection and congratulation.

Up to the Revolution of 1688 the export of wool was made a capital offence, which had been the first act of the Legislature after the Restoration. But under William III. this Act was annulled; but severe penalties were still inflicted upon those convicted of sending wool abroad; and the Acts inflicting them continued in force even through the subsequent reigns of the Georges; nor were they fully repealed until the year 1825, when the minds of our legislators began to be enlightened on the real interests of commerce. Upon a review of the state of things under the restrictive policy, they found it amounted to about the same advantage as was derived by "the dog in the manger;" that is, we could neither consume the wool grown in the kingdom ourselves, nor would we allow our neighbours to purchase it; and the consequence was that prices fell. Under the bloody enactment of the Stuarts, it fetched only 4d. or 5d. per pound; but the removal of the capital punishment caused it to rise to 7d. or 8d. Fresh penalties inflicted in 1783 knocked it down to 4d. and 6d.; and in 1752, it rose to 7d. per lb. A violent struggle then took place between the wool-growers and the woollen-manufacturers, the former contending for a free export, as there was a free import of wool; the latter declaring the growers of wool blind to their own interests, and calling on Parliament to set a mark of disapproval on their petitions. The latter prevailed, and the breach between Agriculture and Commerce was, for the time, clearly defined as irreconcilable.

At that period (1791) our imports of wool, chiefly Spanish, amounted to only 3,750,000 pounds weight per annum; while the restrictions on the export of wool, by lowering the price, disheartened the growers, who no longer pursued the means of improving or keeping up the quality of their wool. The consequence was that while in 1790, out of 490 pounds there were 200 pounds of "prime," the same quantity in 1828 yielded only 14 pounds of "prime."

But soon after the commencement of the present century a new era dawned upon the British commerce in wool, from the introduction of sheep into the colony of New South Wales by the exertions of Capt. M'Arthur, who, in 1788, had purchased some coarse-woolled sheep in Bengal, which were the basis of the present Australian

flocks. About ten years afterwards, Capt. Kent, R.N., was requested by the Dutch Government to convey, on board his ship, three rams and five ewes of pure merino breed, to the Dutch colony at the Cape of Good Hope. But, on arrival, the colonists refused to accept them, and Capt. Kent was obliged to take them on to New South Wales—his ultimate destination. With more discernment, M'Arthur gladly purchased them, and considered their acquisition a "god-send" to the new colony, where the illimitable feeding-grounds and climate were somewhat analogous to those of Spain. He crossed the long-woolled ewes from Bengal with the merino rams, and with such success that the mixed-breed was adopted, and in ten years the 70 coarse-woolled Bengalese were superseded by 4,000 half-bred breeding ewes and a proportionate number of rams, the wethers and old ewes past bearing being fattened and slaughtered. Another importation of merinos into New South Wales took place about 1804, when Capt. M'Arthur, being in England, purchased eight merino ewes of his Majesty's flock to take back with him to Sydney. A curious episode in commercial legislation was played off on this occasion. It was discovered that by an unrevoked Act of Parliament the exportation of live sheep from the United Kingdom was an offence punishable with death without benefit of clergy. Here was a demurrer likely to prove fatal either to the exporter or to the enterprise. But, with a generosity equal to that of Nelson at Copenhagen, the Customs put the tariff-glass to the blind eye, and declared that they really could not perceive any sheep on board Capt. M'Arthur's ship, and the gallant sailor escaped from our shores with this truly Royal prize, without being hanged and his head stuck on Temple Bar, to the wonder of all beholders. What the fact of His Majesty's being concerned in the affair had to do with this immunity our deponent saith not; but as a King can do no wrong, it is not impossible that George III. imparted a portion of privilege to his customer in order to secure the purchase-money, which he was well-known not to be slow in doing on such occasions.

Let that, however, pass; it is to the remarkable consequences that ensued, we are desirous of directing the attention of our readers. In the memorable year 1805, Captain M'Arthur found himself in a position to commence the exportation of wool to Europe, and the following decennary of exports will show the enormous progress this commerce has taken since that period.

OFFICIAL ACCOUNT OF WOOL EXPORTED FROM THE AUSTRALIAN COLONIES TO THE UNITED KINGDOM AT INTERVALS OF TEN YEARS.

1808	...	...	...	562 pounds.
1818	...	...	...	86,525 "
1828	...	...	...	834,543 "
1838	...	...	...	5,740,376 "
1848	...	...	...	22,991,481 "
1858	...	...	...	51,104,560 "
1867	...	...	...	133,108,176 "

This, however, does not represent the whole quantity of wool imported into the United Kingdom in those years. We must nearly double the amount by adding to it what we receive from other countries, the total quantity from all parts for the year 1867 being 268,174,386 pounds weight. Of this, there has been re-exported 90,832,584 pounds, leaving for home-consumption 177,341,802 pounds of wool of all descriptions and from all countries.

But how stands Spain, once almost our sole dependence for wool? she is "nowhere," not even mentioned in the enumerated list, being only worthy to be classed amongst "other countries" in the official returns.

And what is the effect in regard to prices of this enormous importation of wool? The general depression on trade of all kinds during last year had, it is true, its effect upon that of wool; but there are strong symptoms of a reaction, for at the several marts for that article the quotations are at least maintained, and the demand is steady, with a prospect of a good foreign trade as the season advances at fair rates.

We have stated the amazing increase of the exports of wool from the Australian colonies to the United Kingdom; but this does not represent the whole of what is exported from thence: a large quantity is sent to the continent, to the United States of America, and to other countries. We have not the official accounts of these, but they would add largely to the commercial marvel which our own purchase exhibits in connection with these young colonies, which are scarcely out of their "teens," but have at once sprung into a manhood of strength and solidity that almost leaves the slow and reluctant progress of the Old-world States in the back-ground.

FOREIGN AGRICULTURAL GOSSIP.

The French District State Agricultural Show just held at Montpellier for the nine départements of the Gard, the Vaucluse, the Pyrénées-Orientales, the Var, the Bouches-du-Rhône, the Hérault, the Aude, the Alpes-Maritimes, and Corsica was fairly successful. Montpellier is not a town of industry, but of science, and intelligence develops itself in the locality at its ease, so to speak. It possesses a faculty of sciences, which has been fruitful in distinguished men, a faculty of letters, a school of pharmacy, and above all a faculty of medicine, the origin of which is almost lost in the obscurity of the past. It was to Montpellier that the English poet Young brought his daughter Narcissa to regain her health as he fondly hoped, but to die as the event proved. Wine formed, perhaps, the principal object of interest at the Montpellier show; but to the visitor the external view of 2,000 or 3,000 bottles similar in form was more tantalising than satisfactory, and was not equal to the presence of 100 fine Charolaise or fat Cotentines. The question whether the show held at Montpellier in 1868 was superior to that held at the same town in 1860, may be answered both in the affirmative and the negative. There was progress as regards the show of wine, and progress as regards the cattle classes, which numbered only 71 head in 1860, while this year there were 169 entries. But there was a considerable diminution in the numbers of sheep, pigs, and poultry, which found their way to this year's show, as compared with that of 1860. The district comprising the départements named does not possess any cattle breed which can be said to be peculiarly its own; and the ministerial programme accordingly did not comprise any special class for any special race, French or foreign. In the class which admitted all the pure French breeds the Tarentaise race was admirably represented; there was scarcely an indifferent beast in this category, and it was only a question of more or less numerous good qualities. There were also many good entries of the small Breton breed; this race must admirably suit the south of France, where pasturage is scarce, poor, and liable to fail altogether when spring is too dry. The visitor sought in vain for specimens of the fine cattle breeds of the centre and the north of France; there was not a single Limousin, not a red Salers, not a white Charolais, not a Norman with a brindled skin. There were no English specimens on the ground; but the Schwitz breed appeared to be the object of general preference. Tarentaise-Schwitz crossings appeared to be in vogue, and furnished excellent results. In the various cattle classes the exhibitors who obtained the most prizes for cattle were M. Bazille, the fortunate laureat of the prize of honour, who alone secured fourteen rewards; MM. Causse, Boch, Richard, Sauvajol, and Jambon. Why in a district so well adapted for the breeding of sheep was the ovine race not more abundantly represented, and by animals of better quality? This was a question often asked, as well it might be; for several of the prizes offered for sheep could not be awarded from a comparative absence of competition. Nevertheless, honourable mention deserves to be made of the animals presented for competition by MM. Trouche, Andouard, Tempier, Marion, Gaja, Rives, Chambert, and Sabatier. As regards the pigs, no category was reserved for the French breeds, or for pure foreign breeds. The visitor had then to content himself with crossings, although in the ranks

of the latter some few pure-bred English specimens might be met with. The first prizes were awarded to M. Cau for boars, and M. Rives for sows. Organized and presided over by M. Rendu, inspector-general of agriculture, the Montpellier show had, among other merits, the advantage of a promenade having few rivals in the world. Thus the spot on which the exhibition was held, and which is known as the Peyron, is terminated by a splendid aqueduct, which furnishes abundantly to the town the water which it consumes. From this spot may be seen to the west the Canizou, in the Pyrénées; to the east Mont Ventoux, near the Alps; to the north the Pic de Saint Loup, an advanced sentinel of the Cévennes; and, finally, to the south the Mediterranean. We pass now to a similar State show, held in another part of France; in other words, we proceed to say something with regard to the Quimper meeting. The Breton breed was splendidly represented at Quimper by 158 animals, males and females, among which we may mention the bulls exhibited by MM. Demolon, of Locstudy (Finistère); Feuntean, of Ergué-Gabérie (Finistère); and Legoff, of Kerfeuntean (Finistère). The heifers brought forward by the same exhibitors were also good; as regards the cows, one belonging to M. de Joncourt, of Ploaré (Finistère) was more especially deserving of mention. The Durham and Ayrshire breeds and the Durham crossings presented numerous and beautiful specimens which especially commended themselves to the attention of visitors. Some of the French visitors to the show, in discussing the pure Durhams and the crossed Bretons, expressed an opinion that where the climate of Brittany was somewhat similar to that of England, and where there existed, as in Great Britain, a soil amended by an introduction of calcareous elements, and enriched by manures, there could be no reason for not breeding Durhams, which they regarded as the expression of a supple climate and a very advanced system of cultivation. These same persons said also that during the last 20 years in the arrondissement of Brest the good effects had been observed of the crossing of Durhams with the Breton race, and they added that this crossing, without diminishing the supply of milk, increased the butter to a certain extent, and at the same time rendered the animal more precocious. The horses brought to Quimper deserved to be attentively examined. The lymphatic system appears to be too much developed in the types prevailing in the north of Brittany; and a dash of eastern blood is found to correct in a striking manner the faults of their conformation and temperament. The Bretons say that experiments with Norfolk blood have yielded encouraging results; but as regards the introduction of Norman blood, they say that it must not be thought of. The exhibition made at Quimper of agricultural and horticultural products was, upon the whole, poor and without interest. We may mention, however, the entry of MM. Lecont Brothers, of Morlaix, comprising some specimens of flax; that of M. de Servigny, of St. Gonazac (Finistère), comprising butter and cheese; that of M. Desclous le Paley, of Nantes, consisting of wines of the Loire-Inférieure, &c.—The French Corps Législatif has been discussing the merits of the present economic régime in force in France; in other words, it has been re-opening the old question of free trade as opposed to protection. The protectionist system has found in M. Thiers one of its most eloquent defenders, and all

that it was possible to say in support of it M. Thiers has said. M. Thiers is persuaded—or affects to be persuaded—that a moderate duty on corn imported into France would have the effect of preventing both an excessive reduction of prices at one time and an exaggerated advance at another. We confess that we do not quite see how M. Thiers arrives at this conclusion, although one fact has been conclusively established by recent experience, viz., that free trade has been powerless to prevent very high prices, if it has also brought about low ones.

—The annual provincial congress of the Norman Association will be held at Flers (in the Orne) from July 8 to July 12. A conference upon agricultural topics will be held every evening; a report will be read from a committee charged with the task of visiting certain farms; a show will take place of beasts, ploughing implements, and agricultural products; on another day there will be an examination of pupils from primary schools, and the meeting will be brought to a conclusion with a banquet. A busy five days' work has been chalked out.

THE FRESHWATER FISHES OF GREAT BRITAIN.

The lovers of the piscatorial art have a great treat in store for them at the studio of Mr. H. L. Rolfe, 31, Nicholas-lane, City, where his great gallery-painting of "The Freshwater Fishes of Great Britain" is now on view.

We have had much pleasure in inspecting this fine picture, on which the talented artist seems to have expended what may truly be called a labour of love. We may not be able to discuss its merits correctly from an artist's stand-point—we might break down when we came to "breath," "tone," "finish," or any other of those topics which seem to be *de rigueur* in an art criticism; yet we are quite judges enough to know, as it were by intuition, that in the present instance we are in the presence of a fine, conscientious piece of work; besides which, we have seen a letter from one of the highest authorities in such matters, in which the writer expresses "admiration for its composition, drawing, and colouring."

Grouped in picturesque confusion, we have the full complement of the denizens of our rivers and lakes, from the royal sturgeon, aldermanic salmon, and voracious pike, down to the homœopathic stickleback—not one is omitted, or one accessory wanting to heighten the illusion. When Fuseli was about to visit Constable's pictures, he invariably asked for his umbrella; and we may well conceive here, if it were possible for the shade of old Isaak Walton to "revisit the pale glimpses of the moon," how on a second visit to Nicholas-lane he would request to be furnished with rods and lines,

reels, landing-nets, and all the paraphernalia requisite for the seduction of the beloved objects of his piscatorial ambition.

At a time like the present, when the supply of our freshwater fish is a matter of deep importance, when the cultivation of salmon and other spawn attracts so much attention, a picture like that to which we this day invite public inspection has peculiar claims to our notice. We feel certain that the talent of the artist (which is all but unrivalled in Europe in its *specialité*) will not be without good effect; that it will awaken still deeper attention to a subject in which we are all interested; that it will encourage a favourite pastime, which has been called, *par excellence*, the "Gentle Art;" and that

"Those now will fish who never fished before,
And those that always fished will fish the more."

The photographs of this fine work are splendid specimens of excellence, and of these again the artist has some highly-finished in water colours, quite equal in brilliancy to the original; in fact, of these two, it is a difficult matter to decide which is the most pleasing. Of course, we know which is most valuable; still, in the copies the surprising neatness of execution, the great fidelity of the colourist, and the apparently greater delicacy of drawing, owing to the reduction of size, altogether constitute one of the most agreeable combinations that have ever come under our notice.

CALENDAR OF AGRICULTURE.

This month is the general season of sowing turnips over the kingdom, except in the eastern counties of the south, where later sowing is less exposed to the fly, and not so liable to mildew. The land must be deeply and thoroughly pulverized by previous workings of the plough and the harrow and the roll, all weeds and stones removed, and rolled flat, and laid in that condition at least two weeks from last ploughing, in order to retain the moisture. Open the drills at 26 to 28 inches' distance by a bout or two furrows of the common plough, or one furrow of the double mould-board, and across the last ploughing of the land, in order that the ruts of the plough may not follow each other.

Lay the dung in the hollows, from one-horse carts; spread the manure evenly along the intervals, so that no part is bare and uncovered; split the ridglet by two deep furrows over the dung, and sow the turnip seeds without delay in the fresh and moist soil, with a double-drill coulter machine, and roll the drills newly made with cast-iron roll of 5 or 6 cwt.

On dry, cloddy, crumbling soils of a clayey texture, that are placed under a dry climate as in South Britain, turnips are better grown on the flat ground, where the moisture is more safely retained than by the exposure of two drillings of the ridglet system. The dung is spread evenly on the rolled

surface of the ground and covered by a ploughing, when the turnip seeds are sown on the fresh tilth by a machine with lengthened coulters, which makes ruts to receive the seeds. The covering is done by the bush-harrow and the roll. In dry seasons the rolling forms a valuable part of turnip farming: it crushes the clods, closes the surface against draught, and acts as a lock and key with regard to moisture.

Farmyard dung must be in a very moist condition, even to dropping, in order to afford to the land and to the seeds that are sown the inestimable benefit of the most essential element of plants at the driest season of the year. That condition and also the convenient covering of the dung in drills and on the flat ground are much promoted by all straws for litter being cut into short lengths by the power of the thrashing machinery, which being placed on the upper or third floor of the building, the straw is thrown by the shakers to the cutting-knives, and hence carried over the yards and spread from travelling carriers of webs that stand on moveable triangular legs. Straw is also cut into chaff by the same application of power.

Sow swedes till the middle of the month, and follow with green round, and ultimately with white globes. Sow by the drop-drill all auxiliary and artificial manures, as bones, guano, ashes, bran, and rape-dust, by splitting with the strong coulters of a heavy double-drill machine a newly made ridglet by the common plough, and deeply done: roll immediately. Turnip sowing is mostly finished this month. In the end of the month plough with a thin furrow the pared and burnt lands on which the ashes have been spread; harrow the surface into a fine condition, on which sow the seeds by hand, and cover by a light bush-harrow, or the grass-seed implements. In some cases a rolling may be necessary. If the lands be deep and loamy work the ground by the usual earths into a fine tilth, and drill and sow as in other cases of wrought lands. Sow rape and coleseed for winter food. Plough lands on which winter vetches have been consumed, harrow the surface finely, and sow in rows across the ploughing white turnips with

bones or guano as manures. Sow in broadcast the headlands of the turnip fields, and use short dung, as it is easily covered.

Plough the intervals of the drills. Horse and hand-hoe potatoes, beet, carrots, and parsnips. Plough potatoes deeply, especially on stiff soils, and break the drills well down with the hand-hoe. Minute care adds much to the success of crops, and fine earths are essential to all root plants.

Continue the feeding, in the yards, of cows and horses with clovers and vetches; feed the animals with abundance; provide ample littering, and much manure will be made.

Cut all weeds from among the grain crops. Allow not any weeds to perfect the seeds on pastures by fences or on road sides. Many seeds are winged and carried by the wind to a distance, and propagate very rapidly.

Finish the shearing of sheep this month. Examine the animals closely as they pass through hands at this time in the month, the shape and quality of the wool, and the general appearance. An inspection of the animals at this time, and the placing upon them of marks of distinction of age and condition, will much assist the sorting of the ewes for the tupping season in October.

Wean the lambs of the year, and place them on the best pastures. Put mares to the stallion fortnightly throughout the month.

The cutting of hay will commence in the end of the month, in early seasons, in forward meadows, clovers, and sainfoins. Ted meadow hay thinly and regularly as it is cut; place the herbage in cocks, spread them out, and in three or four days it may be carried to the rick. Allow four to six hands to each mower, with extra hands for the carrying process. Turn rapidly the swathes of clovers and sainfoin, as much shaking loses the leaves, which are a most valuable part of the plant: place the herbage in large cocks to stand a time. In stacking hay it is better that the rick consolidate by its own weight than by heavy treading, as is usually done. Damage from rain is much relieved by a mixture of salt in the rick, about 30lbs. to a load.

CALENDAR OF GARDENING.

This month displays the management of the ground in the digging and manuring, as the plants will attain the vigour that is requisite to sustain the maturity either fully ripened or partially reached. The stems and leaves must be produced in a proper bulk and number, or no ample return of fruits, pods, roots, and tubers can be expected. This month places the growth of the plants, and sets the produce of fruits.

KITCHEN GARDEN.

First week: Return to the sowing of the early kinds of peas, as Hotspur's, Charlton's, and Corn-mack's Kent, at least in two successions in the third week. Sow some rows of the "tall marrow," and other tall growers, as they bear for weeks. Peas sown late seldom escape mildew. Dig the ground

deeply; manure with moist vegetable compost, six inches under the seed drills; soak the soil over that; raise a three or four-inch ridge of fine earth, press it firm and even; make the drill three inches deep, sow the seed, water it, return the covering earth, and put it down. By this treatment, with waterings in the lower ground on each side of the ridge, peas will succeed in the driest summers.

Sow kidney beans and runners at least twice in succession. Sow cabbage, to come in speedily in summer and autumn—the small quick growers. Sow Dutch turnips for autumn, carrots, and onions—the latter about the close of the month for being drawn young, or to stand the winter. Sow small salads, lettuces, and round spinach every week or ten days.

Fourth week : Sow again turnips, and salads, and lettuces.

Stick peas ; earth and hoe between crops. Plant out cucumbers and vegetable marrows.

Transplant Cape broccoli about the middle of the month—cauliflower for August, making the ground very rich with compost ; also transplant borecole, Scotch kail, Savoy, and Brussels sprouts.

Asparagus beds still yield, but should not be cut beyond the 10th ; beds and rows are mutilated by close cutting. A shoot should always remain untouched to each crown. Scatter rich earth with droppings over the beds, but avoid salt, for if a particle fall on the wet leaf, it decomposes its tissue, and the plant dies : better to mix an ounce or two with a bushel of compost, and let it thus be washed into the ground.

Plant young lemon-thyme, savory, sweet marjoram, basil, and also slips of lavender, rosemary, rue, and other hardy sweet herbs, in cool, shady beds, for subsequent transplantation.

Cut the aromatic herbs for drying when they begin to show flower. Thin out onions by degrees for use, leaving the bulbing stock from four to six inches asunder. If the weather be very dry, frequent hoeings, lightly done, to keep the surface from cracking, will also cause the attraction of moisture, and bring on the plants. This result has been sufficiently often exemplified to establish a fact during the driest seasons of more than two months wanting rains. The crackings of the surface are very hurtful to vegetation, and are easily prevented by frequent hoeings and stirrings in the driest weather.

Onions, in rows of three or four on a bed, are best protected against drought ; and the large intervals between the beds are well trodden by foot to keep the surface close from chinks and openings. Crops of peas are increased by the intervals being covered with any bodies or materials, or from being hard trodden by foot. This fact has been often observed.

FRUIT DEPARTMENT.

Apple and pear, espalier and dwarfs, have produced many young shoots. Those ill-placed ought to be removed to the bottom ; the others may be left for a month longer. Lay in the best shoots of cherries and plums. Many persons foreshorten early and repeat the operation—prefer to wait till the summer's growth be nearly at a close.

Vines require a regulation every ten days to curtail the fruitful shoots, and train in the succession. Hothouses are not found on farms, but sometimes occur on walls of gardens and houses.

Water strawberries daily, if possible, in very dry seasons ; this is the only security, and not over-ripening the fruit. If small birds, and particularly blackbirds, abound, strawberry rows should be strung on each side ; the twine fastened to short sticks, so as to support the entire rank of trusses.

Cucumbers in frames must be always stopped at a fruit ; melons, first at the second or third joint, to secure six good laterals, and then as fruit appears, but not so rigidly as cucumbers, taking care to impregnate the fruitful flowers.

FLOWER GARDEN.

Pipe and layer pinks at the end of the month. Cloves, carnations, and picotees succeed best by layers slit carefully through two joints, pegged down an inch deep with fern pegs, and covered with sifted earth containing one-third of chalk or lime rubbish from old mortar, another of sharp sand, and the same of old cattle-dung.

Raise tulip, hyacinth, narcissus, and other bulbs ; dry them in the air. When the green parts change colour and become dry, all bulbs may be raised from the ground.

Arrange flowering shrubs and herbaceous plants in places where the sizes graduate from low ones in front to higher at the back. Attend to order in displaying the colours whenever the collection is miscellaneous.

Routine culture consists in hoeing, raking, cleaning, and sweeping walks and lawns, with the removal of litter to manure compost grounds, where every jot of vegetable matter, if deposited in a sunk excavation, and watered as has been directed, will soon be converted into a most useful manure. Fine earths and the droppings of animals must form the basis of all composts, and also the regular mixings.

Attend to the beds of geraniums and of similar flowers, being kept clear of weeds, dead leaves, or any unsightly object. Earwigs are best destroyed by pots with hay or tow in them, inverted upon sticks a foot or more high.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR MAY.

The weather having been tolerably fine, notwithstanding somewhat strong easterly winds, and the absence of an adequate supply of rain, vegetation in general has made steady progress. There has not been more than an average supply of grass in the pastures ; but, as a fair quantity of rain fell towards the close of the month, there is now the prospect of a good hay crop. The wheats upon all soils are looking remarkably well ; whilst all kinds of spring corn promise a good yield. Although only limited supplies of home-grown wheat have been on sale in the leading markets, the demand for both red and white qualities, owing to the splendid appearance of the crops, and the large importations of foreign produce, has

ruled heavy, and prices have given way 2s. to 4s. per quarter. At that amount of depression very little business has been transacted, buyers generally being of opinion that there is ample room for a further decline in the quotations. There can be no doubt that wheat has long since seen its highest price, and that some difficulty will be experienced on the part of most of the importing houses to sell their grain at a profit. The stocks of all kinds of foreign grain and flour held in the United Kingdom are estimated at 1,500,000 quarters. The inquiry for barley and malt has been somewhat restricted ; but oats have advanced 6d. per quarter. Beans and peas have ruled about stationary ; but flour has been drooping in price. The accounts from France and Germany are to the effect that the crops are looking remarkably well. In the United

States wheat promises a heavy yield, and there is still a good surplus left for export purposes. Prices in Europe have gradually given way; still, there is very little margin of profit on shipments to England. The exports from America are seasonably good.

The demand for hay and straw has been steady. Meadow hay has sold at from £3 10s. to £4 10s.; clover, £3 10s. to £5 10s.; and straw, £1 10s. to £1 16s. per load.

Very large quantities of colonial wool—910,000 bales—have arrived for sale. The auctions have been well attended both by home and foreign buyers, and fine qualities have produced rather more money. English wool has been tolerably firm in price.

Old potatoes have sold slowly at from 70s. to 160s. per ton. New English qualities have produced 18s. to 90s. per cwt. The potato crop is looking well even on poor soils. Last year at this period old potatoes were held at from 100s. to 175s. per ton.

The hop vine has grown rapidly. There are, however, numerous complaints of vermin in the best grounds. The demand for all kinds of hops has been very quiet, at about stationary prices. Very few foreign hops have come to hand.

In Scotland considerable inactivity has been apparent in the sale for most descriptions of produce, and prices have had a drooping tendency. The supplies of wheat and spring corn brought forward have been very moderate.

The Irish markets have been scantily supplied with grain, which has moved off heavily on easier terms. The shipments to England have been rather limited.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Although full average supplies of beasts in excellent condition have been on sale in the Metropolitan Cattle Market, the demand for most breeds has ruled steady, and prices have had an upward tendency. A few very superior Scots and crosses have sold at fully 5s. 2d. per 8lbs., but the more general top figure has been 5s. The foreign beasts exhibited have shown no signs of improvement compared with former seasons.

The arrivals of sheep have considerably exceeded the corresponding month in 1867, whilst the condition of most breeds has been good. On the whole the demand has ruled steady, and the quotations have had an upward tendency. Shorn Downs and half-breeds have sold at from 4s. 10d. to 6s. per 8lbs.

There has been a fair consumptive inquiry for lambs, at steady currencies, viz., from 6s. 4d. to 7s. 4d. per 8lbs. The supplies have been seasonably extensive.

Prime small calves have changed hands freely at extreme rates, but inferior calves have met a dull inquiry at previous quotations.

The sale for prime pigs has been firm, at very full prices. Large hogs have commanded scarcely any attention.

The total supplies of stock brought forward have been as follows:—

Beasts	...	...	...	17,610
Sheep and Lambs	...	...	...	176,000
Calves	...	...	...	2,192
Pigs	...	...	...	1,350

COMPARISON OF SUPPLIES.

May.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1867	19,860	120	160,970	1,709	2,280
1866	16,275	—	125,490	695	2,195
1865	22,030	475	129,140	3,199	2,117
1864	23,240	534	122,910	2,062	3,080
1863	20,444	538	126,040	2,139	3,130
1862	19,273	510	132,450	1,527	3,032
1861	19,500	500	113,750	1,178	2,950
1860	19,040	543	124,580	2,059	2,920
1859	17,980	482	113,512	1,012	2,260
1858	18,722	480	115,886	1,671	2,760
1857	18,741	450	104,990	1,415	2,530
1856	18,722	495	119,640	1,260	2,545
1855	19,347	410	113,800	2,470	2,590
1854	20,831	576	124,824	2,146	2,435

The arrivals from our own grazing districts, as well as from Ireland and Scotland, thus compare with the two previous years:—

From—	May, 1866.	May, 1867.	May, 1868.
Norfolk, Suffolk, &c. . .	4,620	7,460	9,200
Other parts of England.	1,900	2,600	2,200
Scotland	774	950	554
Ireland	170	—	426

The imports of foreign stock into London have been very moderate, and in but middling condition. The numbers reported are as under:—

	Head.
Beasts	5,096
Sheep and Lambs	18,023
Calves	1,263
Pigs	245

Total	...	...	...	24,627
Imports in May, 1867	...	...	...	53,485
" 1866	...	...	...	43,930
" 1865	...	...	...	40,729
" 1864	...	...	...	38,832
" 1863	...	...	...	22,161
" 1862	...	...	...	11,206
" 1861	...	...	...	18,978
" 1860	...	...	...	18,910
" 1859	...	...	...	10,713
" 1858	...	...	...	6,708
" 1857	...	...	...	7,248
" 1856	...	...	...	3,556
" 1855	...	...	...	7,108

Beasts have found buyers at from 3s. 2d. to 5s. 2d., mutton 3s. 4d. to 5s., lamb 6s. 4d. to 7s. 4d., veal 4s. to 5s. 4d., and pork 3s. 4d. to 4s. 4d. per 8lbs. to sink the offal.

COMPARISON OF PRICES.

	May, 1864.	May, 1865.
	s. d. s. d.	s. d. s. d.
Beef from	8 4 to 5 0	3 4 to 5 0
Mutton	3 8 5 4	4 2 6 4
Lamb	6 4 7 8	6 8 7 8
Veal	4 2 5 4	4 2 5 2
Pork	3 6 4 6	3 6 4 10
	May, 1866.	May, 1867.
	s. d. s. d.	s. d. s. d.
Beef from	3 10 to 5 2	3 4 to 5 2
Mutton	4 4 6 0	3 6 5 2
Lamb	6 8 9 0	6 6 8 0
Veal	5 4 6 4	4 4 6 0
Pork	4 0 5 0	3 0 5 4

Only moderate supplies of meat have been on offer in Newgate and Leadenhall. Trade generally has ruled firm, and prices have slightly advanced. Beef has sold at from 3s. to 4s. 8d.; mutton, 3s. 2d. to 4s. 8d.; lamb, 5s. 8d. to 4s. 4d.; veal, 3s. 10d. to 4s. 10d.; pork, 3s. to 4s. 8d. per 8lbs. by the carcase.

The imports of foreign meat have been on a very moderate scale.

There has been a fair average supply of grass in the pastures. Stock has, therefore, fared tolerably well. The late fine rains have done much to secure for us a fair crop of hay.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ALCESTER.—There was a large supply of stock of all kinds, and reduced prices were accepted. Mutton from 6d. to 6½d. per lb.

ASHBURNTON GREAT MARKET.—There was a good supply of bullocks and sheep, which changed hands. Beef met with an advance, whilst mutton remained about the same. The following were the rates: Cows and calves £14 to £20, fat beef 6s. to 6½s., store bullocks 60s. per cwt.; fat sheep in wool 6½d. to 8d., store sheep 6d., shorn ditto 6½d. to 7d. per lb., couples 45s. to 60s. each.

AYLTH WHITSUN MARKET.—There was an unusual display of cattle, mostly lean, and chiefly consisted of Irish beasts of all ages and qualities. Notwithstanding this large

supply, most of them, except the Irish, were sold by the close of the day. Home-cattle sold thus: Yearlings £6 to £8, two-year-olds £10 to £16, three-year-olds (fat) £18 to £30; farrow cows £12 10s. to £15 10s., cows in calf £14 to £17, calving queys £11 10s. to £12 15s. Irish beasts sold at all prices, from £1 5s. to £15. There were a few transactions in sheep, the best cross hogs being bought at 4s. 6d. each.

BANBURY FORTNIGHTLY FAIR.—The prices obtained were an advance on late rates. Mutton sold at about 4s. 8d., beef 4s. 10d. to 5s. 9d. per 8lbs.

BERWICK FORTNIGHTLY MARKET.—Sales proceeded briskly, and for both cattle and sheep there was a rise in price, compared with the previous market. Beef made from 8s. to 8s. 9d. per stone. All the sheep in the pens were clipped. Although enhanced prices were obtained, farmers in some instances asked more money than dealers were willing to give, and several lots remained unsold at the close. Mr. Darling, Mordington Mains, sold a lot of ewes at 5s. each; Mr. Purves, Hough-head, at 40s.; and a lot from Horncliff Mains, belonging to Mr. Mather, also at 40s. Mutton made about 7d. per lb. There was a good show of cows, for which, however, the demand was limited and prices varied. There was a large show of pigs, which realized the prices of recent markets.

BEVERLEY FAIR.—A large number of horses changed hands, good animals being in great demand, and high prices were obtained. Many dealers from London, Leeds, and other large towns, attended the fair. The beast and sheep fair was well attended, and many of them were sold, although high prices were required.

BOSTON SHEEP MARKET.—Not a large show of fat sheep, and trade slow at from 6d. to 6½d. per lb. Hogs not numerous, and prices not materially altered.

CAISTON FORTNIGHTLY MARKET.—The show of sheep and cattle was rather smaller than usual. There was a sufficient attendance of customers, but both sheep and beasts changed hands at lower figures, and trade was generally without animation.

CAWDOR MONTHLY TRYST.—A large attendance of farmers and dealers; and the show of stock, though not equal to last month, was an average display, and the quality of the cattle was generally good, a few lots being rather superior, but little or no fat on the ground. Business was stiff throughout, but prices were well maintained, and a large number of sales were effected, of which the following are the principal: Mr. Smith, Baildon, sold a lot of cross heifers at £14 each, and a lot of two-year-old stots at £19; Mr. Macrae, Blackcastle, sold a lot of five crosses at £18 10s.; Mr. Harrold, Dulcie, sold a lot of one-year-old cross stots at £10 15s.; Mr. Arnold, Burnside of Lethen, sold a lot of four cross stots at £9 10s.; Mr. Clark, Tradespark, sold a lot of one-year-old storks at £5 10s.; Mr. Morrison, Braeside of Lethen, sold a lot of polled stots at £13; Mr. Fraser, cattle-dealer, Nairn, sold a lot of 20 two-year-old heifers at £15 15s.; Mr. Macpherson, Carnoch, sold a lot of cross stots and heifers at £15 5s., and a cow in calf for £15; Mr. Mackintosh, Tradespark, sold a six-quarter-old heifer for £5 5s.; Mr. Macglashan, Broadley, bought a lot of one-year-olds at £4 12s. 6d.; Mr. Cruickshank, Milton of Petty, sold a lot of cross stots at £18, and a lot of polled queys at £13 5s.; Mr. McBean sold a lot of cross stots at £13; Mr. Souter, Dalcross, sold a lot of one-year-old cross heifers at £8 8s.; Mr. Macgillivray, Cawdor, bought a lot of one-year-old polled crosses at £9 5s.; Mr. Macdonald, Croy, sold a lot of cross storks at £10 7s. 6d.; Mr. Mackintosh, Reheran, sold a lot of cross storks at £8 8s.; Mr. Kennedy, Loch of Claus, sold a lot of one-year-old cross storks and a lot of two-year-old cross stots at an average of both lots of £10 10s. each; Mr. Stewart, Bog of Cawdor, sold a lot of two-year-olds at £13 each.

CHURCH STRETTON FAIR.—Cows and calves were readily disposed of at prices varying from £13 to £23, and fat stock sold well. Good barrens and well-bred store stock met with purchasers at about late rates; but inferior cattle of all sorts were nearly unsaleable. The supply of sheep was rather small, but quite equal to the demand, and lower prices had to be submitted to, to effect sales. Strong store pigs fetched high prices, but small pigs were rather lower than last fair.

COCKERMOUTH FAIR.—The attendance of dealers was larger than that of the first fair, and the demand was exceedingly brisk for stock in good condition, at the following

high prices: Fat heifers and bullocks £15 to £20, milch cows £14 to £19, Irish cattle £5 10s. to £10 10s. each. A speedy clearance was effected.

DALKEITH HORSE FAIR.—The largest and most important horse market held in the Lothians at this season. There was a want of customers even for good horse-flesh, and at the close of the market a number of these had not changed hands. The demand for harness and riding horses was stiff in consequence of the high prices which were asked by holders. Mr. Gray, Edinburgh, sold draught animals at from £35 to £45, one at £65, and harness-horses at from £16 to £23, and 40 and 50 guineas. Mr. Edgeley, Edinburgh, sold at from £30 to £45. Mr. Robert Allan, Glasgow, bought draught-horses at from £18 to £30. Mr. Brown, Biggar, bought some aged animals at from £16 to £25. Mr. Hamilton, Haddington, bought and sold young cart-horses at from £35 to £35. Mr. Torrance, Edinburgh, sold draught-horses at from £15 to £47. Mr. Birnie, Edinburgh, sold harness-horses at from £17 to £38. Mr. Yuill, Glasgow, bought cart-horses at from £30 to £45. Mr. Wilson, Edinburgh, sold harness and riding-horses at from £18 to £33. Among the horses sold by farmers, the prices in general ranged from £25 to £45, according to quality. Riding-ponies fetched from £8 to £14.

DOBSET FAIR.—There was a good supply of heifers and calves, which were sold at prices ranging from £12 to £18 each, whilst barreners were sold readily at from £8 to £14. Prime fat beasts sold at from 12s. to 13s. per score, heifers and calves from £14 to £18; mutton out of the wool 7d. per lb., Down couples at 50s., wether hogs 27s. to 37s. 6d. A very fine Hereford bull sold for £30.

DUNCHURCH FAIR.—There was a large attendance, and a good supply of all sorts of stock. Beef sold readily at 7d. to 8d., and mutton at 6½d. to 7½d. per lb. There was a large number of store beasts, but sellers asked more than buyers (of whom there were a good number present) chose to give till the rain comes and starts the grass.

HANDFORD FAIR was upon the whole a good show, and upwards of 12,000 sheep were penned, but trade was indifferent. Hoggets realized 25s. to 55s. each; fat sheep 8s. to 8s. 6d. per stone. The show of cattle was large. Fat beasts fetched from 8s. to 8s. 6d. per stone; store beasts from £6 to £14 a-piece.

HELMSLEY FAIR.—We had a good supply of sheep, which sold at rather lower prices. Cattle went at advanced rates, but they had only a slow demand.

HIGHBRIDGE FORTNIGHTLY MARKET was rather thinly attended. There was a good supply of mutton, which realized from 6½d. to 7d. per lb. Lambs were scarce, and rather inferior. A good supply of store sheep, but rather a sluggish sale. Beef very scarce, and a poor supply of cows and calves; cows yielded from £14 to £16. Of yearlings there was a fair supply, but long prices demanded for them. There was also a fair supply of pigs, which were disposed of at very high prices. Good sucking sows from £3 10s. to £4; quarter-old store pigs yielded from 25s. to 30s.

KIDDERMINSTER FAIR.—Fat stock sold well, but stores were not in demand so freely.

KNARESBOROUGH FORTNIGHTLY MARKET.—There was a good attendance of buyers, and a good clearance effected. A moderate supply of fat stock, at from 8s. 6d. to 9s. per stone. A thin show of fat sheep, clipped, at 6½d. to 7d. per lb. Fat calves 7½d. per lb. Fat lambs 25s. to 28s. each.

LEEK FAIR.—The show of horned cattle was exceedingly large, and, owing to the market being overstocked, prices were rather low. Of sheep and horses there was a pretty good show; buyers were, however, scarce.

LINCOLN FORTNIGHTLY MARKET was a very small one, but few hogs being on offer. Trade was also slow, and prices about the same as the previous market.

LOUTH SHEEP MARKET.—3,400 sheep were penned, and prices may be quoted at an advance of from 1s. to 2s. per head on last week's prices. Of mutton there was a good show, and last week's quotations were realized. Ewes and single lambs from 55s. to 60s., ewes and pairs 65s. to 70s. All the sheep were sold.

MARKET WEIGHTON FAIR.—The show of beasts was unusually large, and many of them were in prime condition. A great number of sales were effected, and prices, in many instances, were in favour of buyers. The show of sheep was

only small. The beasts sold remarkably well, one of them fetching above £32. Sheep averaged 6½d. to 7d. per lb.

MORETONHAMPTON GREAT MARKET.—It was supplied with well-conditioned cattle. Cows and calves bore up in quantity and also in quality equal to any of the former markets, varying in price from 15 to 20 guineas each. Prime fat bullocks were sold readily at rather advanced rates. There was but a moderate supply of ewes and lambs, most of which were sold.

MUR OF ORD MONTHLY MARKET.—The attendance was poor compared with the market of last year. There was an entire absence of fat sheep of any description, and the principal lots exposed consisted of half-bred and black-faced hogs. Several lots of Cheviot ewes and lambs were on the stance, but for this class the demand was exceedingly dull, and few transactions effected. The abundance of pasture caused the demand to be principally of hogs, on account of their being made earlier ready for the markets, and we can only account for the decrease in the numbers brought forward from the fact that those requiring hogs for hill pasture bought at the April market. On the other hand, holders of stock have already made provision for keeping sheep by purchasing grass parks, and are thus unwilling to expose them till they get the benefit of the abundant pasture. Wedders of any age were not represented. The market opened stiffly, and continued so throughout, although the lots which changed hands were sold at from 1s. to 2s. a-head higher than at the April market. At five o'clock a good many remained unsold. Many lots of all classes of grazing stock were disposed of before entering the stance. For two-year-olds the demand was keener than for any other class, and they were sold at higher prices than have been obtained for a number of years back. The abundance of pasture all over the country rendered grazing cattle more enquired after than any other class, and expositors, aware of this, held out for high prices. The few lots of fat cattle which were exposed were readily picked up in the early part of the day at very good prices. The number of stock on the ground was almost on a par with the corresponding market of last year, and the attendance of local and southern dealers about the ordinary. Towards the close of the market a good many lots were returned home unsold, and at seven o'clock the stance was almost cleared. Mr. MacLennan, Cairnglass, sold a lot of two-year-old cross stots at £14; Mr. Munro, Caithness, a lot of two-year-old cross stots at £13 10s., another lot at £12, a lot of two-year-old Highland queys at £7, a lot of Highland stots at £7 5s., and a lot of two-year-old cross queys £13 10s.; Mr. Middleton, Cornon, a lot of two-year-old cross stots at £9; Mr. Robertson, Kinkell Castle, Dingwall, a lot of cross shott storks at £9 5s.; Mr. Smith, Munchloch, a lot of cross storks at £10; Mr. Macleod, Coulmore, a lot of 20 one-year-old crosses at £13; Mr. McCotquodale, Auchterneed, a lot of cross storks at £9 10s.; Mr. Maclean, V.S., Inverness, a lot of two-year-old cross stots at £15 5s., and another lot at £12.

NEWARK FAIR.—1,767 sheep were penned, but the sale was rather slow, hogs ranging from 40s. to 58s., and ewes with lambs 42s. to 60s. There was a large supply of cattle, this being the first May fair since the abolition of cattle plague restrictions. Steers fetched £7 to £14, maiden heifers £12 to £14, milch cows £18 to £20; bullocks, two to three years old, £14 to £16; calving heifers £16 to £18; fat beasts 8s. 6d. to 9s., pigs 6s. 9d. to 7s. per stone. The horse fair was the best we have had lately. Good animals readily fetched high prices, but the inferior class predominated. Dray horses realized from £30 to £45, hack £35 to £35, inferior ditto £10 to £15, a very few inferior class of ponies £6 to £10, and a few yearling farmers' horses £18 to £20.

NEWARK FAT STOCK MARKET.—There was a large show of sheep, and prices were 6d. to 6½d. per lb. Also a few lambs, which sold at 2s. to 30s. each. Beasts realized 8s. 6d. to 9s. Mr. E. Bailey sold 3 bullocks at £24 15s. to £28 each, 113 hogs 34s. 6d. to 44s. 6d. each, 7 ewes 45s. to 46s. each, 20 wethers 50s. to 52s., 3 rams 54s. to 71s., and 5 lambs 26s. to 28s. 6d. Mr. Moss sold 25 fat theaves at 47s. to 51s. each.

NEATH FAIR.—There was a good attendance of cattle, which sold well. Cows with calves from £9 to £14 each; sheep from 7½d. to 8d. per lb., lambs 9d. to 9½d. per lb. Pigs few and high in price.

OVER FAIR.—There was a great quantity of dairy cows and heifers, varying in price from £7 to £25. Cows on profit

sold for £12, £15, £18, £20, and even £25. There appeared more cows stirring in the fair than money to purchase them. There was a good show of pigs, which were dear; nice weaned pigs fetched from £1 1s. to £1 5s. each. Stores were much in demand, and were sold from 30s. to £3 3s. There were plenty of sheep, but trade in them was dull, and prices very low.

ST. AUSTELL MONTHLY MARKET.—Business was brisk in cattle; fat cattle brought £3 5s. per cwt. Cows and calves did not realize the price that was expected; lambs about 8d. per lb., averaging £1 to £1 3s. a-head. The sale of sheep was dull.

SALISBURY FORTNIGHTLY MARKET.—About 120 beasts, but sales ruled slow, best oxen realizing late figures, while other descriptions were easier to buy. In the sheep department upwards of 1,800 were penned; and although there were some good and useful qualities, the trade was inactive, and less money taken than at the last market. Oxen made from 11s. 6d. to 12s. 6d., and heifers from 10s. 6d. to 11s. 6d. per score. Down mutton may be quoted at 7d. per lb. out of the wool, and secondary qualities at less money.

SHERBORNE FAIR.—There was a fair attendance. For beasts extremely high prices were asked and obtained. There was a rough lot of sheep, so no criterion can be gathered as to their rates. Pigs were a shade lower.

TOLLER DOWN FAIR.—There was a numerous attendance. The supply of sheep was small, and the several lots were rapidly cleared out at an advance of 3s. upon prices recently realized; altogether trade is much firmer than of late, and a better feeling seemed to exist amongst dealers. Horn ewes fetched from 40s. to 55s., and some of superior quality 50s. to 52s.; horn lambs made from 24s. to 30s. each. Downs were in very small supply, and quotations were not worth giving. A large number of weaning calves were brought into the fair, and were readily disposed of at from £3 to £4 each. Cart horses of superior quality changed hands at satisfactory prices.

WORCESTER MONTHLY MARKET.—A good show of stock. Beef ranged from 6d. to 8d. per lb., but mutton was in slow demand at 6d. to 6½d. Pigs in slow request.

IRISH FAIRS.—**COOTEHILL:** Calves £3 to £4, storks and bullocks £5 to £8 15s., springers £11 to £17, heeves £17 to £24. Sheep fat. Lambs 20s. upwards, mediums and wethers 32s. upwards, fat beasts 40s. to 48s.—**ARROW:** New milch cows and springers £11 to £16 each, strippers at £7 to £12, three-year-old heifers £10 to £12 each, two-year-old ditto £6 10s. to £9 10s., yearling heifers £3 10s. to £5 10s., yearling bullocks £3 to £5 each, two-year-olds £6 10s. to £9, three-year-olds £9 to £11 10s., and four-year-olds about £18 each. There was a good supply of sheep at advanced prices.—**CAVAN:** Springing cows near calving £18 10s. to £24 10s. each, springers £9 10s. to £14 13s., yearling calves (off) and storks £4 10s. to £10, strippers and dry cows for fattening £8 5s. to £12 10s., sheep 30s. to £2 15s. each, lambs 15s. to £1 5s., store pigs and suckers £1 18s. to £2 15s.—**CASTLEBRIDGE:** There was a large attendance, business brisk, and prices going up. Three-year-old bullocks and heifers £9 to £16, two-year-olds £7 to £14, yearlings £5 to £6 15s., beef 5s. to 63s. per cwt., new milch cows £8 to £14, springers £9 to £16, strippers £9 to £11, fat sheep 38s. to 55s. in the wool, stores 30s. to 35s. each, lambs 20s. to 23s. each, bacon pigs 53s. 6d. to 55s. per cwt., stores 30s. to 50s. each, bonhams 16s. to 25s. each.—**CALLAN:** Fat sheep 30s. to 44s. per head, ewes with lambs 32s. to 40s., hoggets 37s. to 35s., yearling bullocks and heifers £3 to £5 10s., two-year-olds £6 15s. to £9 5s., three-year-olds £11 to £14, milch cows £14 to £15 10s., second-class beasts £10 10s. to £12, stagers £7 10s. to £8 5s., springers on the point of calving £15 to £17, milchers and inferior £13 to £8 10s., strippers £9 5s. to £11 10s.—**LORNA:** New milch cows 14 to 18 guineas, middling £10 10s. to £13, and inferiors £7 15s. to £9 10s., fat cattle £17 to £21 10s., second and third class 51s. to 55s. per cwt., young calves 20s. to 30s. per head, yearlings £3 5s. to £6 10s., two-year-olds £6 to £9 10s., four-year-olds £11 to £15 15s., hoggets 27s. 6d. to 37s., ewes with lambs 32s. 6d. to 44s., bonhams 22s. per pair, slips and stores 26s. to 48s. each.—**ATHLONE:** Bacon hogs £4 10s. to £5 5s., stores £2 10s. to £2 15s. 6d., slips £1 10s. to £2, yearling bullocks £3 10s. to £6 each, two-year-olds £5 16s. to £8, (extreme rates), and three-year-olds £9 10s. to £13, yearling heifers £6 15s. to £8 10s., two-year-olds £8 to £12, and three-

year-olds £12 to £15, beef cattle £2 18s. to £2 18s. per cwt., mutton 4½d. to near 6d. per lb., milch cows lately calved £14 to £16, middling and inferiors £10 down to £8, heavy springers 11 to 14 guineas, beasts likely to drop in a month or two £9 10s. to £12, hoggets 30s. to 37s. 6d. each, and lambs 20s. to 27s.—DUNDALK: There was an immense quantity of stock, consisting of bullock and heifer beef, sheep and lambs, milch cows and springers, and dry cattle. High prices were demanded, and a brisk business was transacted for several hours, the holders of dry stock being compelled to submit to a fall of ten

per cent. on previous prices; but fat cattle, mutton, and lamb went up a similar sum, and beef of good quality brought 7½d. per lb., and lamb and mutton 8d. per lb.; milch cows were readily bought up at from £10 to £16; springers were five to ten per cent. cheaper; store cattle ranged from £3 to £8; but there was not an extensive sale of this class: the demand was for a class older, which could be turned into beef after a few months' feeding. Some ponies brought good prices on account of their beauty, being fit for the English market. Pork pigs and suckers in demand, and brought prices above the average.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

For three weeks the month of May was almost uninterruptedly fine—sometimes very sultry, and often with strong east wind—until at last a degree of drought was reached, exceedingly injurious to peas and beans in blossom, and partly so to other kinds of spring corn. Indeed, whole fields of peas were lost by it, and but for some timely rains just then happening the bulk of the corn crops would have been much diminished. Wheat planted in autumn, and making deep root, continued to look well, with a renewed prospect of an early gathering; yet it has increased in strength by the welcome showers. The rain, not having as yet been heavy, will be again shortly in requisition; and let us hope that it will fall as necessity requires, for another deficient harvest would open scenes of disaster truly lamentable. Without arrivals coming hitherto up to estimate, though for the last week greatly on the increase, the forcing heat has lowered wheat prices continuously, till the decline has reached 4s. to 5s. per qr. Large vessels have lately arrived from the Black Sea, and the first contribution of New York since the opening of the canals has appeared, swelling the general account, but acting more in the way of promise than of present pressure. Yet the month's returns of English sales has only been 170,189 qrs. wheat, against 218,357 qrs. in 1867 and 264,666 qrs. in 1866. So our quantities sold in the 150 towns is little more than half what they have been in good years. Unless, therefore, our arrivals should continue more liberal than they lately have, the wants of the country are yet likely to crop out, and a sudden rise in consequence is not impossible. It is now very probable that the new imports from America will lose money, and this may operate as a check upon further free shipments; but with a universally good appearance of wheat upon the ground throughout Europe, it is possible there will be some anxiety to sell, whether to profit or loss. Spring corn does not give the same promise, as it looks patchy in many fields; but we are in the hands of One who has governed the world from its foundation, and who in His wisdom or judgment may limit our supplies when the ordinary bounty of His hand is reduced. So let us hope for the best, and "trust Him at all times." The following rates were recently quoted at the several places named: The best native white wheat at Paris was worth 78s., red 76s.; fine wheat at Liege, 79s.;

native red at Brussels, 72s.; white Zealand at Rotterdam, 78s.; Saale wheat at Hamburg, 69s. Wahren and Rostock, 70s.; Hungarian, 66s. Marks wheat at Stettin, 63s. 6d.; red Hungarian, 57s.; high mixed Polish, 66s.; Serbian at Mayence, 62s. 3d.; Franconian, 67s. 6d.; native red at Frankfort, 65s. 6d.; at Cologne, at 64s.; high mixed wheat 60½ to 61½s. per bush. at Danzig, to 72s., low to 63s.; red wheat at Romanshorn, in Switzerland, 69s.; at Berlin, 70s.: Theiss and Banat wheat in Hungary to 53s. per qr.; lower quality down to 43s. Wheat at Montreal, 59s. 6d. per 480lbs.; No. 1 spring wheat at New York, 64s. 2d.; No. 2, 59s. per 480lbs.

The first Monday in London commenced on a small supply of English wheat; but there was a good arrival of foreign. The morning's show of samples from Kent and Essex was very limited; but the weather being fine, millers held off as much as possible. Here and there a fine sample was taken from urgent necessity at the previous rates; but eventually sales could only be made at 1s. per qr. less money. Scarcely anything was passing in foreign, and to have made sales less money must have been taken. Floating cargoes were not in active request, though nominally unaltered in value. The dulness of the London accounts were increased by fine weather in the country. Scarcely any business was passing, unless at some concession. A decline of 1s. was submitted to at Hull, Wakefield, Boston, Bristol, Lynn, Gloucester, Gainsborough, Birmingham, Market Harborough, Melton Mowbray, Manchester, Stockton, &c.; while those markets held later in the week were mostly down 1s. to 2s. per qr., Liverpool having cheapened both on Tuesday and Friday. Glasgow was rather lower, Edinburgh was 1s. to 2s. down, Belfast was 1s. per qr. lower for wheat, and Dublin 6d. per barrel.

On the second Monday there was again a very small arrival from Kent and Essex; but the foreign supplies continued good. The exhibition of samples during the morning from Kent and Essex was about the shortest of the season, pretty clearly showing there was but little to send. The continuance of fine weather, however, more than counterbalanced the smallness of the English supply, and the finest parcels of the few exhibited sold but slowly at the previous rates, while inferior sorts did not bring former prices. Choice foreign

found occasional buyers at unaltered rates; but rough parcels of red were only to be sold, and that in retail, at some concession. With short arrivals off the coast, prices were rather in favour of buyers. The aspect of the country wheat trade was very similar to that exhibited in the previous week, but little was exhibited; yet the same difficulty was experienced in sales, millers not being willing to go a hairbreadth beyond their actual necessities, and, on the other hand, some farmers were indisposed to quit at any decline. The following places, however, consented to take 1s. less—viz., Boston, Bourn, Gloucester, Spalding, Gainsborough, Workop, and Hull; while some in order to make sales were content to accept 1s. to 2s. per qr. less. Among these were Birmingham, Wakefield, Sheffield, Newark, Nottingham, and Market Rasen. Liverpool was down 6d. per cental on the week Glasgow gave way 6d. to 1s. per boll, and Edinburgh 1s. to 2s. per qr. Dublin found scarcely anything doing, and Belfast was 1s. per qr. cheaper.

On the third Monday the English supply was also moderate, and the foreign arrivals least for the three weeks. Few samples were exhibited on the Essex stands, and scarcely any on those of Kent; but the weather having become forcing, there was more decision towards a fall, so that another decline of 2s. per qr. was the consequence, with very little trade. In foreign more was doing than in the previous week, some country millers having scarcely anything to go on with; but the business passing was at 1s. to 2s. per qr. decline. Cargoes afloat, though not numerous, could only be placed by accepting 1s. to 2s. per qr. less money. With the onward progress of fine weather, an equal decline was kept up in the country during the week, some few days being almost tropical; but towards the close, light rains and strong winds set in, very serviceable to the spring corn, and invigorating to the wheat. The downward movement being more decided, we can generally describe it as amounting to 1s. to 2s. per qr.

On the fourth Monday there was a slight increase in the English supplies; but with the help of 11,000 qrs. from New York, the foreign arrivals were more than doubled. The rain fallen having been rather serviceable to the wheat than otherwise, and highly beneficial to all spring corn, though there were only a few fresh samples from Essex, and almost nothing from Kent, prices again gave way 1s. to 2s., without an active placement. Sales were also made in foreign at a like reduction, and cargoes afloat were reduced fully 1s. per qr., with but small inquiry.

The imports into London for four weeks were 14,590 qrs. English, 108,016 qrs. foreign, against 19,004 qrs. English, 144,286 qrs. foreign in 1867. The London average commenced at 75s., and closed at 75s. 3d., but intermediately they were 77s. 7d. The general averages opened at 73s. 11d., and closed at 74s. 3d. per qr. The London exports during the month were 560 qrs. wheat, 194 cwts. flour. The imports into the kingdom for the four weeks ending May 16 were 2,804,059 cwts. wheat, 198,230 cwts. flour, both being equal to about 677,676 qrs. wheat.

The fine weather and state of the wheat trade

have been seriously against flour; but the diminished supplies from the country, and the comparatively small foreign arrivals have prevented any serious decline. Indeed, so little remuneration has attended its manufacture of late, that some large country mills have been closed; and hence the arrivals from the country have been falling off. The reduction has been fully 2s. on country sorts, and 1s. to 2s. on foreign sacks and barrels, though town millers have yet made no alteration in their top price, which has all along stood at 64s. per sack. The imports into London for the four weeks were 60,129 sacks country, 13,730 sacks 3,988 barrels foreign, against 73,124 sacks country, 6,033 sacks 2,844 barrels for the same period in 1867.

There has been an increase in the arrivals of maize during the month, and the fine weather has kept this grain dull, notwithstanding its late reduction; but prices have not further given way. Some Egyptian, lately arrived, has not brought over 37s. per qr., which price was lately paid for grinding barley. Some fine American has been held at 41s. to 42s., yellow 40s. to 41s. The imports this month were 19,608 qrs., against 16,276 qrs. last year.

The barley trade, as respects malting qualities, had been dwindling down to very small dimensions; and it is well no extraordinary demand has further increased its high price. Grinding sorts have remained scarce and dear, but those have lately been undersold by Indian corn; and should supplies keep up, we may expect to see a further decline; but this grain generally is pretty well used up; and it is well some rain has lately fallen, for the crop would soon have been exhausted in the growth, had the sultry heat and drying winds continued. Grinding sorts yet bring about 35s. and 36s. per qr. Malting qualities are wholly unreliable as to values. The imports into London during the month were 943 qrs. British, 15,684 qrs. foreign, against 2,548 qrs. English, 14,416 qrs. foreign, in 1867.

The malt trade has continued in calm, without any variation of prices through the month.

The oat-trade, after a long continuance of English supplies, has lately been almost left to what foreign countries can do. The month's arrivals of home-growth are not equal to what a week's used to be, while Scotland and Ireland this season are failures; yet prices are, and have long been, at so high a range, that only 6d. has been gained during the month. Last year's fine crop of hay has been partially available, and there has been an early cut from the meadows and artificial grasses—all serviceable in their turn; and tares will come on, and lessen the necessity for so much dry food. Prices have varied for feeding sorts, from 23s. to 29s., from 34 to 40lbs. per bushel, and higher weights in proportion. It is to be hoped more rain will fall plentifully for this crop, or we shall run short. The imports for the month into London were 2,158 qrs. English, 120 qrs. Scotch, 160 qrs. Irish, 70,973 qrs. foreign, against 2,030 qrs. English, 4 qrs. Scotch, 220 qrs. Irish, 223,628 qrs. foreign for the same period last year.

pay an advance of 2s. to 4s. per cwt. on the best samples of last year's growth on prices current this day fortnight; but medium and rough lots remain notably unchanged in value. Business is doing in yearling and older dates at late ruling rates. The bine has made satisfactory progress in growth during the past week; and we now hear but little complaint of injury from the flea.

POTATO MARKET.

SOUTHWARK WATERSIDE.

LONDON, MONDAY, May 25.—During the past week the arrivals coastwise and by rail have been far in excess of the demand, and a further reduction in price has been the consequence. The following are this day's quotations:

Yorkshire Flukes.....	120s. to 160s. per ton.
Ditto Regents	90s. to 110s. "
Ditto Rocks	90s. to 100s. "
Dunbar and East Lothian Regents...	90s. to 120s. "
Perth, Forfar, and Fife Regents	70s. to 90s. "
French and Belgian whites.....	60s. to 70s. "

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, May 25.—There has been a fair supply of new English potatoes on sale, for which the trade has been steady, at from 18s. to 20s. per cwt. The show of old produce has been more than equal to the demand. Last week's import consisted of 26 tons from Boulogne, 197 Dunkirk, and 2 tons from Amsterdam.

Regents	130s. to 160s. per ton
Flukes	130s. to 170s. "
Rocks	90s. to 110s. "
French	70s. to 90s. "

COUNTRY POTATO MARKETS.—BARNSELEY, Saturday last: Rocks 13s. to 13s. 6d., regents 14s. 6d. to 15s., and flukes 16s. 6d. to 17s. per load.—DONCASTER, Saturday last: A good supply of old ones, and a few new ones at 4d. per lb. Regents 11s. to 12s., flukes 12s. to 15s., seedlings 6s. to 9s. a load.—MALTON, Saturday last: There has been a fall of about 6d. per bushel in potatoes for table, rounds now being 3s. 6d., flukes 4s. 6d. per bushel. Good demand for seed, which is firm at 3s. rounds, and 4s. flukes. New potatoes 4s. per peck.—MANCHESTER, Saturday last: Potatoes 8s. to 18s. per 252lbs., new ditto 3s. to 8s. per score.—YORK, Saturday last: This market was one of the duller on record. The sales were very limited, and generally prices were much lower. Flukes were about 15s. per tub of 280lbs., and 1s. per peck retail; regents 12s. per tub, and 10d. to 11d. per peck; and new potatoes 1s. 6d. per quart.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—	s.	d.	CHEESE, per cwt.—	s.	d.
Friesland	90	02	Cheshire	56	74
Jersey	80	00	Dble. Gloucester	56	66
Dorset	104	108	Cheddar	66	76
Carlisle	—	—	American	46	58
Waterford	—	—	HAMS: York	84	90
Cork	—	—	Cumberland	84	90
Limerick	—	—	Irish	82	88
Sligo	—	—	BACON:—		
Frank, per doz., 11s. 0d. to 14s. 0d.			Wiltshire	76	80
			Irish, green	70	74

CARMARTHEN BUTTER MARKET, (Saturday last.)—In consequence of a heavy storm and torrents of rain, the farmers refrained from attending our market to-day the supply of butter was merely nominal at 11½d. and 11½d. for prime brands, but with larger quantities on the market for some weeks to come it is expected prices must gradually go down to their settled price for the season. Cheese in good demand at higher rates.

CORK BUTTER EXCHANGE, (Friday last.)—Ordinary: first quality 97s. to 94s., second quality 96s. to 93s., third quality 88s. to 85s., fourth quality 83s. to 80s. Mild-cured: first quality 104s. to 101s., second quality 99s. to 96s., third quality 96s. to 93s. Repacked and dairies, 3rd, 4th, 5th, and 6th of kegs 4s. per cwt. less. Currency—ordinary butter 10s. per cwt. less, mild-cured 10s. ditto, sponged butter 2s. ditto.

POULTRY MARKETS.—Goatsling 6s. to 8s., Ducklings 3s. to 4s. 6d., Pigeons 6d. to 9d. each. Surrey Fowls 10s. to 15s., ditto Chickens 7s. to 10s., Barndoor Fowls 6s. to 9s., per couple. English Eggs 7s. 6d. to 8s., French 7s. 6d. to 8s. per 100.

COVENT GARDEN MARKET.

LONDON, SATURDAY, May 23.

French cherries and apricots still continue to be offered in unusually good condition. Of strawberries, a few have made their appearance from open ground in the West of England, and there are also some from France. They fetch from 3s. to 6s. per lb. New peas from Kent and from various other counties are plentiful. New potatoes from Lisbon fetch from 2s. to 4s. per 12lb. Broccoli is nearly over, but spring cauliflowers are excellent, as is also asparagus, of which there is a plentiful supply. Flowers chiefly consist of orchids, stocks, lily of the valley, pelargoniums, fuchsias, deutzias, mignonette, and roses.

FRUIT.

Apples, per bushel.....	s. d.	a. d.	Melons, foreign each.....	s. d.	a. d.
Chestnuts, per bushel.....	0 0	0 0	Nectarines, per doz.....	0 0	0 0
Cob nuts, per lb.....	0 0	1 0	Oranges, new, per 100.....	4 0	10 0
Currents, per lb.....	0 0	0 0	Peaches, per dozen.....	34	0 0
Figs, per dozen.....	0 0	0 0	Pears, per dozen.....	6 0	10 0
Filberts, per lb.....	0 0	0 0	Pine Apples, per lb.....	8 0	12 0
Gooseberries, per qt.....	0 0	0 0	Piums, per ½ sieve.....	0 0	0 0
Grapes, per lb.....	4 12	0 0	Strawberries, per lb.....	0 0	10 0
Walnuts, per 100.....	6 0	10 0	Walnuts, per bushel.....	10 0	20 0

VEGETABLES.

Artichokes, per dozen.....	s. d.	a. d.	Mushrooms, per potle.....	1 6	to 2 0
Asparagus, p. bundle.....	3 0	6 0	Must. & Cress, per punn.....	0 0	0 0
Beans, Kid., per 100.....	1 0	2 0	Onions, per bushel.....	8 0	5 0
Beet, per dozen.....	1 0	2 0	Pickling, per quart.....	0 0	0 0
Broccoli, per bundle.....	0 0	0 0	Parley, per bunch.....	0 2	0 4
Cabbages, per dozen.....	1 0	0 0	Parley, per dozen.....	0 0	0 0
Carrots, per bunch.....	1 0	1 6	Peas, per peck.....	0 0	0 0
New, per bunch.....	1 6	2 0	Potatoes, York.....	140	0 170
Cauliflowers, per doz.....	0 0	0 0	Regents, per ton.....	140	0 120
Celery, per bundle.....	1 0	1 6	Rocks, per ton.....	140	0 120
Cucumbers, each.....	0 6	1 3	Flukes, per ton.....	75	0 80
Endive, per score.....	1 0	2 0	Other sorts, per ton.....	0 0	0 0
Garlic & Shallots, per lb.....	0 8	0 0	Kidneys, per cwt.....	0 0	0 0
Herbs, per bunch.....	0 2	0 0	Radishes, per 12 bund.....	0 0	0 0
Horseradish, per bundle.....	3 0	5 0	Sea Kale, per punnet.....	1 0	1 0
Leeks, per bunch.....	0 2	0 4	Spinach, per bushel.....	0 0	0 0
Lettuces, per dozen.....	0 0	0 0	Tomatoes, per dozen.....	0 0	0 0
Mint, per bunch.....	0 6	0 0	Turnips, new, p. bun.....	1 0	1 0

LEADENHALL LEATHER MARKET.

LONDON, SATURDAY, May 23.

The supplies of leather are unusually small. The trade has ruled firm, at full quotations. Raw market hides have been in limited request, at barely late rates.

CROP HIDES.

lbs.	lbs.	d.	d.
22 to 35	12	to 13½	
36 to 40	12	14½	
40 to 45	12½	17	
45 to 50	14	18	
50 to 55	16	19	
55 to 60	17	20	

BUTTS.

ENGLISH.			
		d.	d.
14	16	.....	15
17	20	.....	14½
21	24	.....	15
25	28	.....	15
29	32	.....	15
33	36	.....	15

TIMBER.

LONDON, SATURDAY, May 23.

The demand has been only to a moderate extent, on former terms.

BALTIC FIR TIMBER.					
Per load 80 cubic feet.					
	s. d.	s. d.		s. d.	s. d.
Riga.....	60	0 to 63	0		
Dantzig and Memel.....	75	0	85	0	
Crown.....	68	0	70	0	
Best middling.....	50	0	50	0	
Good middling.....	44	0	48	0	
Second.....	37	0	43	0	
Common middling.....	37	0	43	0	
Small, short, and irregular.....	37	0	43	0	
Swedish.....	45	0	48	0	
Small.....	37	0	43	0	
Swedish & Norway.....	33	0	38	0	
halks.....					

AMERICAN PITCH PINE.					
United States.....					
	s. d.	s. d.		s. d.	s. d.
Memel, crown.....	110	0	130	0	
Brack.....	80	0	90	0	
Dantzig and Stettin.....	85	0	110	0	
Crown.....	50	0	63	0	
Brack & unsquared.....	50	0	63	0	

WAINSCOT.					
Per log 18 cubic feet.					
	s. d.	s. d.		s. d.	s. d.
Riga, crown.....	88	0	92	0	
Brack.....	50	0	53	0	
Memel and Dantzig.....	75	0	85	0	
Crown.....	45	0	55	0	

DEALS AND BATTENS.					
For Petersburg standard hundred.					
	s. d.	s. d.		s. d.	s. d.
Archangel.....	10	10	12	10	
Seconds.....	8	10	9	0	
Petersburg.....	10	10	12	0	
Wyburg.....	8	10	9	0	
Finland and hand-sawn Swedish.....	7	0	8	0	
Petersburg & Riga white deals.....	9	0	10	0	
Memel and Dantzig.....	12	0	13	0	
Crown red deals.....	8	0	9	0	
Brack.....					

HAY MARKETS.

LONDON, SATURDAY, May 23.

SMITHFIELD.—A short supply.					
CUMBERLAND.—A fair trade.					
WHITECHAPEL.—A steady demand.					
	s. d.	s. d.		s. d.	s. d.
MEADOW HAY, ...	65	0	90	0	
CLOVER.....	70	0	105	0	
STRAW.....	30	0	36	0	

BIRMINGHAM, MONDAY, May 18.—Hay, £4 to £4 10s. per ton. Straw, 2s. 10d. to 3s. 2d. per cwt.

BRISTOL, FRIDAY, May 22.—Hay 75s. to 100s. per ton. Straw 2s. 3d. to 2s. 8d. per doz.

WORCESTER, TUESDAY, May 19.—Hay, new 67s. 6d. to 80s., old 80s. to 90s. Straw, 46s. to 50s.

HIDE AND SKIN MARKETS.

LONDON, SATURDAY, May 23.

MARKET HIDES:					
	s. d.	s. d.		s. d.	s. d.
56 to 64lbs.....	0	3	to 0 3 1/2		
64 to 72lbs.....	0	3 1/2	to 0 3 3/4		
72 to 80lbs.....	0	3 3/4	to 0 4		
80 to 88lbs.....	0	4	to 0 4 1/2		
88 to 96lbs.....	0	4 1/2	to 0 4 3/4		
96 to 104lbs.....	0	4 3/4	to 0 5		
104 to 112lbs.....	0	5	to 0 5 1/2		

Horse hides, each ... 8 0 to 10 6

Calf skins, light ... 2 0 to 4 0

Full ... 7 0 to 8 0

Foiled sheep ... 0 0 to 0 0

Half-breeds ... 0 0 to 0 0

Downs ... 7 0 to 8 0

Shearlings ... 1 1 to 1 2

Lambs ... 2 0 to 3 6

BARK AND TANNING MATERIALS.

LONDON, SATURDAY, May 23.

	s. d.	s. d.		s. d.	s. d.
English, per load of 45 cwt. delivered in London.....	18	0 to 10	0		
Coppice.....	0	0	0		
Dutch, per ton.....	5	0	6	0	
Hambro'.....	5	0	6	0	
Ashterp Tree.....	6	0	10	0	
Do. Coppice.....	6	10	7	0	
French.....	9	0	11	0	
Mimosa Chopped.....	9	0	12	0	
Do. Ground.....	9	0	12	0	
Do. Long.....	8	0	10	0	

ENGLISH WOOL MARKETS.

CITY, MONDAY, May 25.—There is very little doing in English Wool, there being only a limited demand for the finer qualities. No change, however, has taken place in the quotations.

The present limited trade is owing to the large quantities of Colonial produce now being disposed of by public sale.

CURRENT PRICES OF ENGLISH WOOL.					
	s. d.	s. d.		s. d.	s. d.
FLEECES—Southdown hoggets.....	per lb.	1 4	to 1 4 1/2		
Half-bred ditto.....		1 5	to 1 6		
Kent fleeces.....		1 4	to 1 4 1/2		
Southdown ewes and wethers.....		1 3 1/2	to 1 4		
Leicester ditto.....		1 3	to 1 3 1/2		
Sorts—Combing.....		1 0	to 1 0 1/2		
Clothing.....		1 2	to 1 6		

BRADFORD WOOL MARKET, (Thursday last.)—Since wool began to relax in price two or three weeks ago, its value has fallen on an average about a penny a pound; some kinds may be worth within a halfpenny of the top figure, but others are three farthings cheaper. At these rates there is a fair consumptive demand. Opinions as to the future differ greatly. Many men regard the market as flat and without prospect of improvement, while others, arguing from the experience of former years, anticipate a revival in price with the new clip.—Bradford Observer.

LEEDS (ENGLISH AND FOREIGN) WOOL MARKETS, (Friday).—There is still a disposition manifested to await the effect of an early and large clip on prices, so that little English wool is bought, except such as is required for immediate consumption. Prices of most sorts are not altered materially, but manufacturers only buy what is needed for immediate use. The prices of good colonial wool are generally quoted rather higher at the sales, but there is some difficulty in getting at advance in the local markets, though the manufacturers are generally well employed.

MALTON WOOL MARKET, (Saturday last.)—The continuance of hot weather has greatly expedited the sheep shearing, and most of the hogg sheep are either shorn or will be during the week. The ewes have also been taken in hand on some farms. There was, however, only hogg wool on offer, and that sparingly; but inquiries as to values of other sorts were numerous. The tendency was to flatness, and the following, as about the average quotations, were given: Hogg fleeces 21s., ewe 17s. to 17s. 6d., half-hogg half-ewe 19s. per 14 lbs.

PONTEFRAC WOOL MARKET, (Saturday last.)—About three hundred sheets of wool were shown, and a good attendance of buyers. The whole of the wool was sold, and the following are the prices realized: Ewes 17s. to 18s. per 14 lbs., mixed 19s. 6d. to 20s., all-hogg 21s. to 22s.

BRESLAU WOOL REPORT, May 20.—Since our last report business continued moderately active, with transactions amounting to nearly 3,000 cwt. All descriptions were required; yet fine ones continue in chief request, home and Saxon manufacturers, as well as English and French commissioners, being the buyers. Prices have been very firmly maintained, and the better qualities fetching more money. For this reason there have been again purchased by contract extensive flocks on the sheep's back at fully last year's quotations, and in many instances there has been even more paid.—GUNSBERG BROTHERS.

PRICE CURRENT OF GUANO, &c.

Peruvian Guano direct from the importers' stores, £12 5s. to £12 7s. 6d. per ton.

Bones, £8 to £8 5s. Ditto Crushed, £8 10s. per ton.

Animal Charcoal (70 per cent. Phosphate) £5 per ton.

Coprolite, Cambridge, whole £2, ground £3 10s. per ton.

Sulphur, whole £2 10s., ground £3.

Nitrate of Soda, £12 10s. to £14 10s. per ton.

Gypsum, £1 10s. Superphosphate of Lime, 25s. to 26s. 6d. per ton.

Sulphuric Acid, concentrated 1 845 id. per lb., brown 1 712 3/4 d.

Blood Manure, £8 5s. to £7 10s. Dissolved Bones, 25s. per ton.

Lime-cakes, best American brl. £11 10s. to £12 5s., bag £11 to £12.

Cotton Seed Cake, 25 lbs. to 27 lbs. per ton.

E. FUSSELL, London Manure Company, 116, Fenchurch Street, E.C.

Guano, Peruvian £12 7 6 to £13 0 0, Linseed Cake, per ton.....

Do. Upper do. 7 0 0 0 0 0 Amer. chin. brs. £20 5 0 to £20 10 0

Bone Ash..... 4 15 0 0 0 0 English..... 11 0 0 11 1/2

Nitr. of Soda, p. ct. 0 12 9 0 13 3 Coted. Cake, decort. 8 0 0 8 5

Lime. Bomby. p. q. r. 3 2 6 5 3 0 Niger..... 2 10 0 2 10 0

Expensed, Gujarat 2 16 0 2 16 0 Brimstone, 24 kard 6 5 0 6 5

Glovered, N. Am. 2 10 0 2 10 0 super. Norths 3 5 0 3 5 0

red, new per cwt. 3 7 6 2 10 0

SAMUEL DOWNES AND CO., General Brokers, No. 7, The Albany, Liverpool.

END OF VOLUME LIV.



